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THE ANTI-TUBERCULOSIS CAMPAIGN IN BOMBAY, INDIA.

By JOHN A. TURNER,

M.D., D.P.H.,

Joint Honorary Secretary to the King George V. Anti-Tuberculosis League of
Bombay; Medical Officer of Health, Bombay.

THE King George V. Anti-Tuberculosis League was organized on April 3, 1912, at a public meeting of the citizens of Bombay, as a fitting memento of the Coronation Durbar and the visit to India of their Imperial Majesties the King-Emperor and Queen-Empress, as also of His Majesty's deep and sympathetic interest in the welfare of his Indian subjects. A representative general committee of about 160 of the most prominent and influential citizens was appointed, from among whom a strong executive committee was selected, with Dr. J. A. Turner, the Executive Health Officer, and Khan Bahadur, Dr. N. H. Choksy, the Special Assistant Health Officer, as Joint Honorary Secretaries. It was realized that to control so widespread, insidious, and powerful a foe as tuberculosis, a most careful and comprehensive scheme and a systematic organization of measures would be essential if anything worthy of the name of the League was to be effectively conducted. The Committee, therefore, drew up a plan of campaign, and the first dispensary and information bureau was formally opened by Lord Sydenham, the then Governor of Bombay, on February 28, 1913, in the presence of a large gathering. The provision of eleven more dispensaries in thickly populated centres, where mill-hands, railway and other employés, and the labouring population mostly reside, is under contemplation, and it is also proposed to attach a tuberculosis department to some of the existing free municipal

dispensaries, if the municipal corporation of the city consent to the arrangement. The League has therefore a very useful programme before it, but unless the funds necessary for the launching of such an ambitious scheme are forthcoming, no real advance can be made. The League is supported by contributions from Mr. Ratan J. Tata, the Government of Bombay, the Municipal Corporation of Bombay, and the general public, the annual income being £2,000.

The *Tuberculosis Dispensary* is in charge of a fully qualified medical man, assisted by two nurses, one clerk, one compounder, and three inferior servants. The central dispensary has been temporarily fitted up at Princess Street, but it will be soon shifted to the building of the Indian Sanitary Institute. The routine work in the dispensary may be classified as under: (a) *Examination of Patients*—Patients pour in from all quarters with recommendations from charitable, religious, and public institutions. The district registrars, who are in charge of the municipal free dispensaries, report to us the cases notified to the health department, as well as send us any of the poor patients in the districts who come under their observation. A large number come through patients already under our treatment, and the medical practitioners refer to us very often for diagnosis and treatment. Unfortunately, some patients, owing to the great distance they have to come, give up treatment when their immediate symptoms have been relieved. The patients are examined for evident and latent signs of tuberculosis, and a record of these, as well as home conditions, conditions of work, etc., are kept and filed. (b) *Treatment of Patients*—Besides receiving instructions with regard to the mode of regulating their life and habits, they receive treatment by drugs, inhalations, and tuberculin. It is sometimes erroneously said that the dispensary is solely a place where tuberculin is injected. Injections are given only to the most suitable cases, and they are called twice a week for the treatment. (c) *The Domiciliary Visits*—The homes of the tuberculous patients are visited by the nurses and the medical officer for the purpose of supervision and education. It is rather a difficult task at times to find out the houses of many of the patients, as they are unable to give anything like a correct address. The nurses usually form a list of patients in any district, make an appointment in the afternoon with the staff of one of the district registrars, and then proceed to trace the people with the help of the "Birth Karkoons" (those who make house-to-house visitation to inquire about births and deaths). Anyone who has insight into Indian conditions will realize the uphill work to inculcate new ideals of hygienic living and the infinite tact necessary to accomplish it. It means an efficient staff of well-trained nurses to carry out an effective follow-up system, to maintain adequate home supervision, and actually to nurse bad cases that cannot secure institutional care.



TUBERCULOSIS OFFICES, PRINCESS STREET, BOMBAY, INDIA.

How common it is to see children sleeping side by side with their tuberculous mothers, and infants being nursed by the latter! Also it is quite a common sight to see advanced patients living in dark, damp, ill-ventilated rooms, full of smoke, and spitting about carelessly on the ground. It is such families that require constant and continuous supervision. (d) *Education of the People*—Education of the people, and specially the children, must be co-ordinated with the simultaneous effort of the sanitary authorities to improve the environments of dwellings. Lectures on hygiene are therefore given by the medical officer in various schools and institutions, and magic lantern slides and various appliances are shown. The nurses have "homely talks" on the benefits of fresh air, ventilation, cleanliness, etc., in the various chawls and houses they visit, and they distribute various leaflets in all vernaculars dealing with the subject of tuberculosis. (e) *Bacteriological Examination*—A small laboratory is fitted up in connection with the dispensary, where facilities are afforded for the examination of blood, urine, sputum, and the preparation of vaccines. Samples received from private practitioners are examined free of charge. (f) *Museum and Information Bureau*—The efforts of the committee to establish a central museum have received encouraging support from some of the specialists in England. Various exhibits, models, diagrams, and hygienic paper goods, etc., have been purchased, and it is hoped to increase the museum as more funds are available. Such exhibition of hygienic appliances is sure to be very instructive. (g) *School Medical Inspection*—As tuberculosis is rife in its various insidious manifestations in India, specially in children, early recognition and treatment in childhood is a preventive measure of the first importance. A preliminary medical examination of children in the municipal schools has already been started, and it is expected that much information will be afforded to the League by such a measure. The municipal school committee have recently appointed three medical officers with nurses, etc., to inspect their primary schools. (h) *Selection of Cases for Sanatoria and Hospitals*—There are very few sanatoria and no hospitals for advanced cases in India. It is the intention of the League to emphasize the importance of establishment of hospitals for advanced cases, of sanatoria and farm colonies, of open air schools, homes for cripples, and the segregation of Purdah women in suitable institutions. Unfortunately, there is practically no provision for advanced cases in the city. The League has already addressed a letter to the municipal commissioner for the provision of a certain number of beds in the Maratha Hospital, and it is expected that by the end of the year the necessary arrangements will be made. (i) *Relation with the Health Department*—The dispensary works in intimate relation with the health department; all cases of tuberculosis are reported to the Executive Health Officer and district registrars, who

are advised when the special disinfection of a house is required. The latter notify to us reported cases and deaths, so that the homes of such persons come under our supervision. The dispensary also reports to the health officer about any insanitary conditions existing anywhere.

For the use of the staff the League has provided a small library, where some books of reference are available. Some of the books have been presented and the others purchased. It will thus be seen that the object of the League is to verify and co-ordinate all the various agencies which play their part in the control and eradication of the disease, and if it is to realize this ideal, it must be the link which will bind the health department, the sanatoria, the hospital for advanced cases, the school medical inspection department, volunteer agencies, labour colony, and last, but not the least, the general practitioner. In conclusion, if the Royal Victoria Dispensary in Edinburgh, founded by Sir Robert Philip, has the distinction of being the first tuberculosis dispensary in the world, the Anti-Tuberculosis League of Bombay has the credit of being the first of its kind in India. It is gratifying to note that the emphasis given to the anti-tuberculosis movement at Bombay has spread to other parts of India, and several branches of the League have been organized in this presidency, as also independent Leagues in other provinces of India.

THE TUBERCULOSIS PROBLEM IN NEW YORK.

A Note on the Organization and Work at the Bellevue Hospital Tuberculosis Division in New York City.

By JAMES ALEXANDER MILLER,

M.D.,

Director of the Tuberculosis Clinic.

AND

G. J. DROLET,

Statistician to the Clinic.

TUBERCULOSIS is still a universal problem, and its varying manifestations call for much scientific study regarding its spread and the possibilities of control. It may be interesting to students of the tuberculosis problem to provide a brief account of the subject as presented in such a thickly-populated part of the world as the congested East Side of New York City, where, in line with the general anti-tuberculosis movement for which that city is noted, an unusually vigorous campaign is being conducted under the direction of the Tuberculosis Division of Bellevue Hospital.¹ In this short article we propose to summarize the work of the Bellevue Tuberculosis Dispensary with its allied departments: the day-camp, the hospital wards reserved for acutely ill cases, the settlement-house, and the various clubs and classes for special groups of tuberculous patients.

The Work of the Tuberculosis Dispensary.

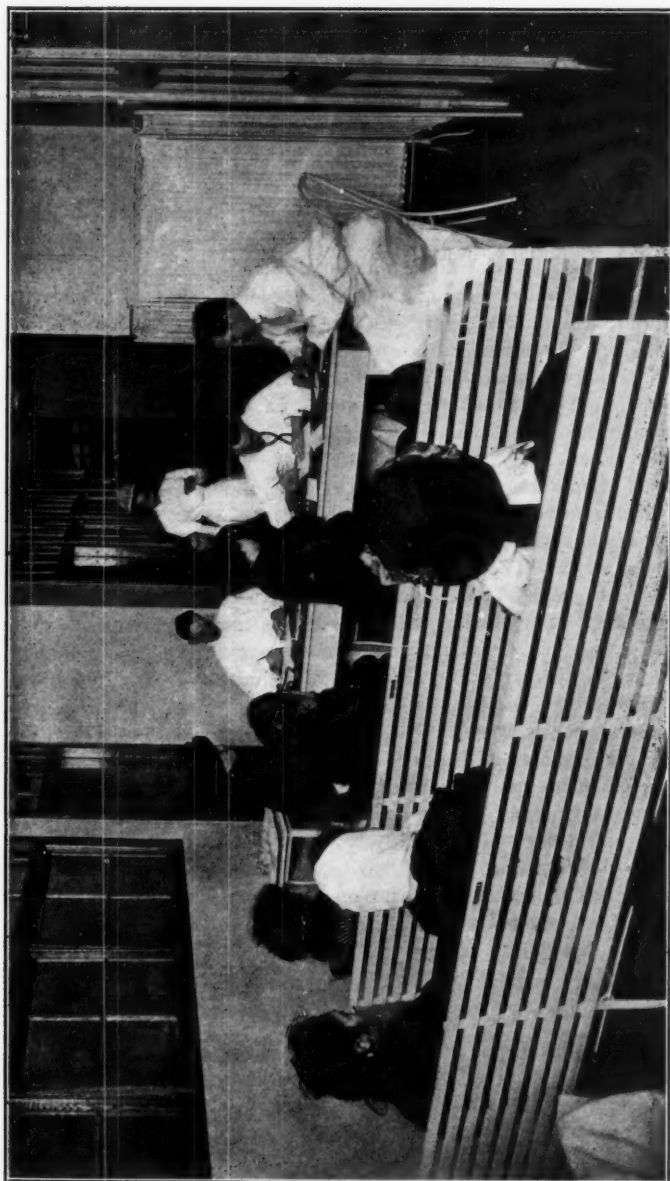
The dispensary opened in December, 1903, with only a handful of patients, but last year 2,273 new patients applied for examination. The district now officially covered, under the agreement with the Association of Tuberculosis Clinics, extends over twenty-two streets—namely, between Twelfth and Thirty-fourth Streets, east of Fifth Avenue. This is in an area of about 860 acres, in which some 125,000 people live. The inhabitants of the district are on the whole very poor, consisting mainly of newly-arrived immigrants struggling hard to obtain a footing where competition perhaps is keenest. The 1910 census showed over one-half (50·8 per cent.) to be foreign-born, and

¹ Bellevue Hospital is one of the three New York City departments which care for the sick poor, the other two being the Department of Charities and the well-known Department of Health.

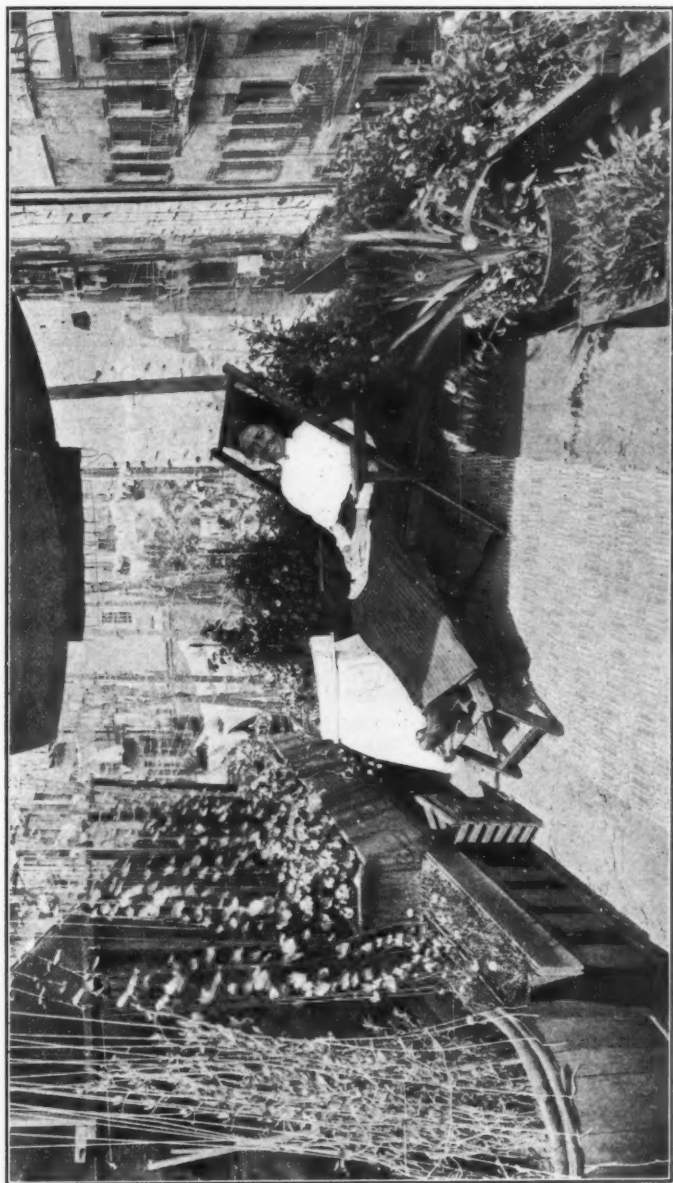
only 40 per cent. of the present population is English-speaking. Italians are now the largest group, and number almost 19 per cent. of the whole population. This will give some idea of the difficulties in the way of an educational propaganda as well as serve as an explanation of the high death-rates that prevail in this part of the city. The general mortality was 24.17 per thousand of population in 1912, or 71 per cent. higher than the rate of New York City as a whole. In 1913, 852 new cases of tuberculosis were reported. Fortunately, almost every one is reached through the dispensary. Here a staff of physicians assisted by trained nurses is in attendance daily. There are separate clinics held for children as well as evening clinics for working patients. The home of every patient residing in the district is visited by nurses who are also experienced social workers. Proper supervision is exercised and help secured or given whenever necessary. In 1913, 3,490 patients in all were treated; they had paid 10,875 visits to the clinic. The visiting nurses paid 4,386 home visits to patients, besides making 2,679 more calls on their behalf to friends, relief societies, hospital bureaus, and similar institutions. Prescriptions for medicine in 11,198 cases were filled free as well as the giving of 1,753 dozens of eggs with 11,560 quarts of milk. Finally, during the same year, 543 advanced cases were placed in hospitals; 85 patients still in the incipient stage of the disease were sent to country sanatoria; and 233 children, from families with tuberculous members, were taken to fresh-air homes in the country for periods varying from two weeks to four months, according to necessity. Principles of hygiene are inculcated in foreign patients by nurses speaking their language, who assemble them in classes throughout the winter months. There are classes for Italians, and also for German patients. There are also sewing clubs for mothers; classes in personal hygiene and domestic economy for working girls; a boys' club, with violin classes, carpentry classes, and troops of Boy Scouts; children's school gardens and open-air playgrounds. It will now be understood how the dispensary is not only a centre for the treatment of out-patients, but has become a focus of educational work, and especially a health clearing-house for the proper distribution of patients.

The Day-Camp.

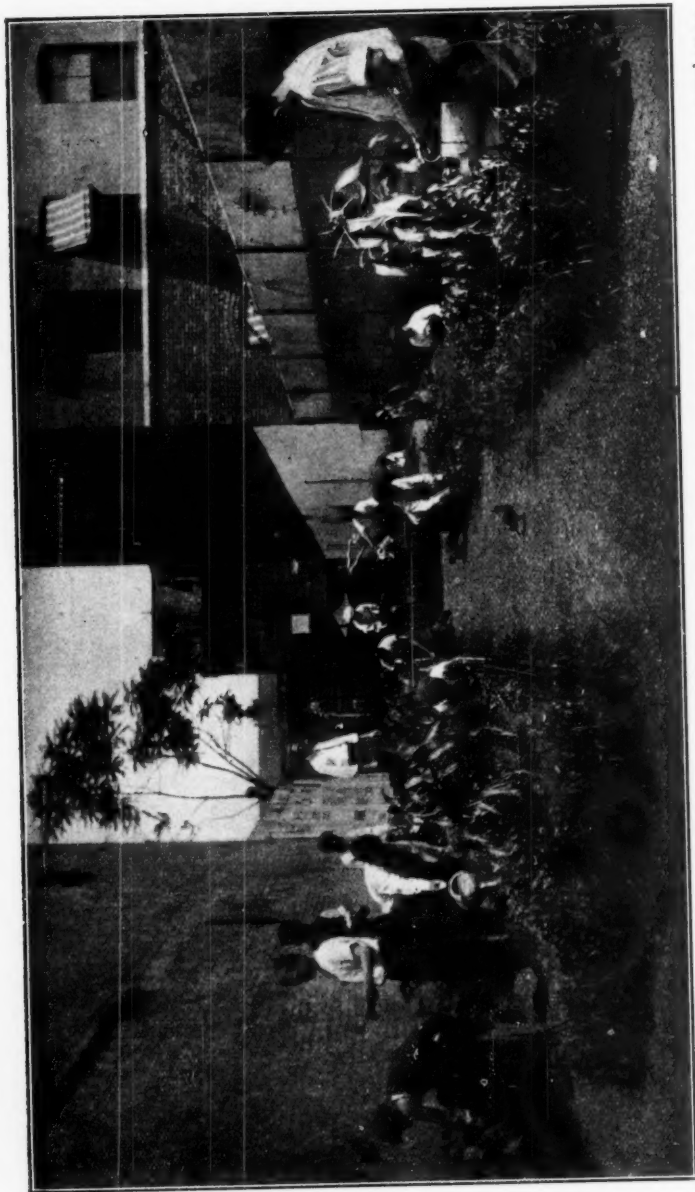
In 1913 the dispensary directed 373 patients to the day-camp, which is fitted out on the decks of a discarded ferry-boat, the *Southfield*, anchored on the East River side of the hospital grounds. Its capacious and airy decks were practically ideal arrangements for following the rest cure. Some of the cabins have been turned into offices and examining-rooms, others into dining-rooms. And not the least im-



BELLEVUE HOSPITAL, NEW YORK CITY: ONE OF THE ROOMS OF THE NEW TUBERCULOSIS DISPENSARY.



THE WORK OF THE BELLEVUE TUBERCULOSIS CLINIC, NEW YORK CITY: A PATIENT UNDERGOING DOMICILIARY TREATMENT ON A CITY ROOF.



THE BELLEVUE TUBERCULOSIS CLINIC, NEW YORK CITY: THE OSBORN PLAYGROUND AND GARDENS OF THE BOYS' CLUB.



THE EDUCATIONAL WORK OF THE BELLEVUE TUBERCULOSIS CLINIC, NEW YORK CITY: NURSES GIVING CHILDREN INSTRUCTION IN FIRST AID AND BANDAGING.



EDUCATIONAL WORK OF THE BELLEVUE TUBERCULOSIS CLINIC, NEW YORK CITY: A SEWING CLUB FOR MOTHERS.



WOMEN'S SECTION OF THE DAY CAMP, SOUTHFIELD, IN CONNECTION WITH THE BELLEVUE TUBERCULOSIS CLINIC, NEW YORK CITY.

portant are the three open-air classrooms where the children, able to attend, are taught regularly as in other public schools. Not only is their recovery unimpeded, but some of them, under the invigorating programme of work and rest in the open air, with plentiful food, make surprising progress in their school studies. There is also a night-camp of twenty-two beds for men. Working men are here preferred. Patients are sent from the day-camp to sanatoria as soon as vacancies are secured, and thus they reach these institutions frequently with their disease already arrested. There is a special department on the day-camp for surgical cases of tuberculosis. Some twenty crippled children are cared for regularly. An omnibus calls for them daily at their homes. The children of the day-camp have their garden, where each one may enjoy the fresh air and "learn to grow well." To them the small plot, with its row of radishes, of beets, and the four corn-stalks, bordered with lettuce, is as much a source of pride as would be entire fields to a farmer. This school garden also inculcates in the children love and enjoyment of out-door life—a much-needed corrective of city life. The results of treatment reach their highest in children. Thus, in 1912, of 55 children discharged, 51 of which were pulmonary cases and 5 cases of adenitis, 35, or 63 per cent., left apparently cured or with disease arrested; 16, or 29 per cent., more had their condition improved; and 4, or 8 per cent., were unimproved. In 1913, 352 patients were accommodated at the day-camp; they received in all 32,293 days of care. The cost of maintenance is small, owing mainly to the securing of meals from the hospital at a very low figure. In 1912 it was only \$2.70 per patient weekly. The attendance last year averaged 105 on week-days and 50 on Sundays. The average length of stay is well over three months—99.6 days in 1912—and patients attend regularly summer and winter.

The Role of the Settlement-House.

The settlement-house, conducted privately under the auspices of the Women's Auxiliary, offers to women patients the like advantages for out-door sleeping on its sheltered roof that the men enjoy at the night-camp on the *Southfield*. In addition, the facilities of the house are of great utility in furthering the educational work of the clinic. Practical demonstrations at nurses' classes assembling there are now possible. The day-camp and the settlement-house have solved the problem of beginning treatment at once with early cases pending the securing of vacancies in sanatoria. They have also reached a group of the tuberculous population which generally refuses going away to the country: the married, with large families from whom they do not want to separate, and the aged; these will now attend the camp



THE CHILDREN'S GARDENS AT THE DAY CAMP, SOUTHFIELD, IN CONNECTION WITH THE BELLEVUE HOSPITAL,
NEW YORK CITY.

during the day, or stay at the settlement-house, because near home, when previously they refused doing anything that would part them from their folks.

The Ward Service of the Hospital.

The hospital proper receives the advanced cases and the acutely ill. Sixty-nine beds are reserved for emergency cases; that is, when their symptoms abate they are transferred to special tuberculosis hospitals, of which there are many in New York City. The work of securing vacancies in hospitals where tuberculous patients may stay as long as necessary is done through a social worker, who visits the ward constantly. The importance of segregating these advanced cases is held foremost, and the worker attempts to relieve or remove anything which might interfere with the patients' going into the hospital. In 1913, 3,781 patients were admitted to the tuberculosis wards of Bellevue Hospital, of which 407 died. For the 3,382 cases discharged, the social worker visiting the wards secured 2,220 vacancies in various city institutions.

The Work of the Women's Auxiliary.

The anti-tuberculosis work at Bellevue Hospital would not be fittingly described without noting the important part undertaken by the Women's Auxiliary. Organized to "secure the personal interest and financial assistance of its members for the various social problems of the clinic," it has assiduously kept itself at the task year after year. In 1913 alone the Auxiliary collected and contributed \$9,684.38 to the work. This fund has been used mainly to provide food, clothing, and necessities, for patients in immediate need. Transportation to hospitals and sanatoria has frequently been paid, as well as furnishing anything necessary to permit patients to follow treatment. The burden of supporting the settlement-house, the boys' club, a small nursery for mothers while they attend the clinic or classes, special workers occasionally, furnishing some employment to patients, etc., has been met by the Auxiliary and its friends.

All our activities radiate from the dispensary. We believe they are bound to have a markedly beneficial effect, not only on the tuberculosis problem, but on the whole public health movement. In the Bellevue district alone the death-rate from pulmonary tuberculosis has fallen 35 per cent. from its high point of 427 per 100,000 people, in 1907, to 271 in 1912. And though it is the practice at the clinic to examine every child from tuberculous families, it is becoming rarer and rarer to find children with active disease.

"SURGICAL" TUBERCULOSIS AND ITS TREATMENT BY HELIOTHERAPY.

By GUY HINSDALE,

M.D.,

Of Hot Springs, Va., U.S.A.; Associate Professor of Climatology in the Medico-Chirurgical College, Philadelphia; Secretary, American Climatological and Clinical Association; Fellow of the Royal Society of Medicine.

THE following short paper deals with the problem of the management of so-called "surgical" tuberculosis by heliotherapeutic measures, as tested at the chief Marine Sanatoria of the French coast and in centres of the Swiss Alps.¹

The French Sea Coast Sanatoria.

Following the pioneer work of Perrochaud and Cazin at Berck-sur-Mer, the later development of heliotherapy in France largely owes its efficiency to Dr. V. A. Menard, whose service has extended over twenty-two years at the Marine Hospital. It is interesting to note that as far back as 1857 Mme. Duhamel, who cared for scrofulous children at Berck, had them wheeled twice a day to the beach, and after bathing them and washing their open sores, refused to clothe the children completely, evidently with the idea that the unobstructed sun and air should be allowed to hasten their cure. Now at Berck, as at the Alpine sanatoria, the free access of sunlight is esteemed the essential feature of treatment. The long galleries, or balconies, at the Marine Hospital are constructed with the express purpose of carrying out the open-air method with *complete exposure of the body to the sunlight*.

In the new pavilions at Berck the patients confined to bed are wheeled from the sleeping wards out on the adjoining galleries at all seasons, except in bad weather or violent wind, where they spend the entire day. In summer the hours on the gallery are from 6 a.m. to 5 or 6 p.m. At night the windows of the wards are always open to the west, the side of the sea, or on the opposite side when stormy. The children remain unclothed from morning until evening, but at night have a slight cover. Operative wounds are exposed after the fifteenth day, but operations are exceptional, and performed only as a last resort. Abscesses are never opened but aspirated, followed or not by injections of suitable medication. Orthopedic treatment is accomplished by prolonged immobilization in plaster. All patients not bedridden are

¹ For further information the reader may be referred to the writer's article in *Interstate Medical Journal*, St. Louis, Missouri, U.S.A., March, 1914; and also "Atmospheric Air in Relation to Tuberculosis," Washington, U.S.A.: The Smithsonian Institution. 1914.

given exercise on the beach, and sea-baths are used in warm weather. The beach itself is wide and sandy and very favourable for children. There is also a large swimming-pool situated in the centre of the buildings, into which sea-water is pumped and heated by steam-coils to a suitable temperature for bathing at all seasons. Fresh and salt water is also available in the bath-tubs throughout the establishment. There is also a hydrotherapeutic department with hot air and steam cabinets.

Alpine Sanatoria for External Tuberculosis.

Turning now to the Alpine sanatoria, we find this open-air method carried out with remarkable success. Indeed, it was doubtless the encouraging results obtained by Rollier of Leysin that the open-air method was put into complete operation at Berck Plage. Both French surgeons and the Swiss surgeon Bernhard of Samaden had previously exposed the affected parts to the sun; but Rollier went further, and exposed the whole body, except where some light, removable plaster apparatus is used. Even here large fenestra are left, so that the sunlight may have free access to the diseased part, which is in greatest need of it. Plaster tends to check the function of the skin, and favours anæmia, softening and lowering of the nutrition of all the subjacent tissues, and restricts healthy tissue changes. Moreover, serious atrophy of muscles and ligaments results from the permanent plaster apparatus commonly employed. Rollier comments on the bad appearance and sometimes the œdema of the limbs of patients arriving with these immovable plaster dressings.

On his arrival, the patient is put to bed in a room, little by little the ventilators and glass doors are opened, and he is gradually accustomed to contact with the air. This is before he is exposed to the free outside air.

The next step is to wheel the patient on his bed to the large sun-gallery or outer balconies adjacent to the bedroom; and beginning with one hour the first day and two hours on the second, and so on, he begins his heliotherapy, properly so called. The temperature record is kept, with the pulse and respiration. The blood and urine are examined and general conditions noted. He is clothed in linen or white flannel, according to the season; he wears a white hat, and is protected from direct sunlight on the face by means of a screen, and wears smoked or yellow glasses.

And now comes the peculiar and interesting method of exposure. It makes no difference where the disease is located—whether in the hip, the spine, or the cervical glands—the invariable rule is to begin with the feet. These are exposed, at intervals of one hour, five times, and only for a period of five minutes. The next day the legs will be

exposed and the same method followed; the third day the thighs as far as the groin for five minutes three or four times; the legs for ten minutes three or four times; then the feet for ten minutes three or four times. On the fourth day the abdomen is exposed; on the fifth the thorax, when the precaution is taken to cover the heart with a damp cloth.¹

If the condition of the patient permits, Rollier presents first the patient's abdomen and next his back to the sun, increasing the number of exposures to six or eight. Finally, on the sixth or seventh day, he exposes the neck and head with careful supervision.

The whole system of heliotherapy aims at acquiring a progressive pigmentation of the skin. This is the underlying basis of the whole matter. It is nearly always proportional to the resistance of the patient, and enables him to bear the sunlight and cold air in a most surprising manner.

It would be very interesting to find out whether Rollier has ever treated any patients of the African race. We all know that negroes are prone to rickets, "scrofula," and tuberculosis, and the mortality is high among them.

Inherent or racial pigmentation does not seem to afford any advantage to the tuberculous subject. But it is evident from experience in heliotherapy that acquired pigmentation goes hand in hand with the cure of external tuberculosis. The sun's rays must confer other benefits than the mere increase of pigmentation. The actinic solar rays are antagonistic to the tubercle bacillus, and that is not to be denied. The illustrations show the bronzing of the skin; it varies from a copper to a chocolate colour. Without it no one could endure the sun cure for so many hours a day or engage, as some of them do, in winter sports with scarcely any protection at all. The illustrations show the young patients after months of treatment, hardy and happy in the snow of an Alpine winter.

There is one remarkable feature of the higher Alpine resorts, such as Leysin, Davos, and St. Moritz, and that is that there is a vast difference between the temperature of the air in the sunshine and in the shade. Although snow may be lying on the ground, temperatures of 95 to 100° F., or even higher in the sun, are not uncommon.

It has been calculated that the sunlight has considerably more actinic force at these mountain stations than at the seashore, and hence the time required for the solar cure is probably less than elsewhere.

¹ Dr. Rollier has put his ten years' experience into definite shape, and has published fourteen papers. The latest and perhaps the best of these was read at the last International Medical Congress at London, August, 1913, amplifying his elaborately illustrated paper, occupying the entire number of *Paris Médical*, February 15, 1913. Dr. Henry Dietrich's excellent description of Rollier's work appeared in the *Journal of the American Medical Association*, December 20, 1913.

But even Rollier and others in the Swiss Alps have strongly urged the adoption of the method of heliotherapy at the seashore sanatoria, and, as we have already seen, this is successfully accomplished. Rollier's record of about 1,200 patients and about 1,000 cures is one of the greatest contributions to modern surgical progress, and especially to the fight against tuberculosis.

Heliotherapy in America.

In this country there is every opportunity for practising heliotherapy for tuberculosis, but, as far as I know, only in two or three hospitals is there any attempt to practise it in the manner described.¹ On January 21 of last year I revisited Sea Breeze Hospital, Coney Island, New York, in order to see what is being accomplished. Six cases of hip disease were being treated by partial exposure of the body to the sun. The patients were in bed on the balcony with the usual extension apparatus in place. General exposure, beginning with the feet and gradually involving the entire body, is not adopted at Sea Breeze, as a rule, and only the area of abdomen, hip, and thigh adjacent to the diseased joint was exposed to the air and sun. Continued cloudy and unfavourable weather had prevented much progress in the newer patients who were then undergoing treatment; others who had been cured of serious tuberculous disease by the open-air method had recently been discharged. The fresh-air system is, however, well carried out, but not upon the naked body, as in Switzerland and France. The temperature on the open balcony next to the wooden wall of the building was 62° F. at noon in the sun. It was the first bright day after weeks of storm and cloud. It is probable that the very encouraging experience of the last two years will lead to the adoption of Rollier's method in all its details, as modified by the less favourable climatic conditions of this part of the Atlantic seaboard.

Results at Sea Breeze Hospital in the treatment of tuberculosis of the bones, joints, and glands have been so good that the city of New York has acquired a new location with 1,000 ft. of beach front on what is known as Rockaway Point, ten miles beyond Coney Island. The plot runs back about 600 ft. to Jamaica Bay, and cost the city, after condemnation proceedings, \$1,250,000. The plans include an arrangement of grounds and buildings which will involve a total outlay of \$2,500,000, and there will be accommodation for 1,000 patients in the eight pavilions. Two of these pavilions are now in course of erection.

¹ These are Sea Breeze Hospital, Long Island; the Crawford Allen Hospital, on Narragansett Bay; and the Pottenger Sanatorium, California.

TUBERCULOSIS AND THE WAR.

By R. MURRAY LESLIE,

M.A., B.SC., M.D., M.R.C.P.

Officier à Académie Française ; Senior Physician, Prince of Wales' General Hospital ; Physician, Royal Hospital for Diseases of the Chest, London.

The Problem of Tuberculosis in Time of Peace.

THE Registrar-General's Report for 1912, published in 1914, indicated a very definite decrease in the mortality from tuberculosis, amounting to a diminution of 5,982 deaths, as compared with the average number in the previous five years corrected for estimated increase of population. Compared with the average rate for the five years 1906 to 1910, there has been a reduction in mortality of 13 per cent. The fall has been shared in almost equal proportion by both sexes, but *the mortality among males has been 33 per cent. in excess of that of females.* This relatively increased male mortality was at its maximum in London, where it amounted to no less than 73 per cent. as against 43 per cent. in the county boroughs, 24 per cent. in the smaller towns, and only 6 per cent. in the rural districts. Urban conditions of life, therefore, seem to increase the liability of death from tuberculosis to a much greater extent in males than in females. The period of greatest mortality is also definitely later in males than in females. In the rural districts the age-period of maximum mortality for males varies from thirty to thirty-five, while in the urban districts the highest mortality occurred a decade later.

It is during the working period of life that the improvement in tuberculosis mortality in males is so much less than that in females, no doubt due to the fact that many of the occupations involving the greatest risk of tuberculosis are confined to the male sex.

Dr. Arthur Newsholme, Principal Medical Officer to the Local Government Board, and other authorities of *the environmental school*, believe that the problem of tuberculosis is in great measure a housing problem, and that it is intimately connected with poverty and its sequelæ, such as overcrowding, defective nutrition, bad ventilation, and other hygienic defects, and accordingly they hold that the progressively decreasing mortality during the past generation is the result of a steady improvement in external hygienic environment. On the other hand, Professor Karl Pearson and other authorities of what may be designated *the hereditary school* attach but little importance to improvement in environmental conditions, and are of opinion that the decreased mortality is the result of a gradually acquired immunity due

to the action and interaction of hereditary factors, which have resulted in the gradual weeding out of the more susceptible individuals. Notwithstanding the above decrease, it is still true that some 25 per cent. of our young men during the active reproductive period of life die of tuberculosis, and that a similar proportion of the inmates of orphan asylums have been orphaned because one or both of their parents have died of tuberculosis.

The Problem of Tuberculosis in Time of War.

The age for military service—nineteen to thirty-eight—corresponds to the two first decades of reproductive life, and it might be well to consider to what extent war conditions will affect the incidence of, and the mortality from, tuberculosis. If a quarter of our young men die from this disease in time of peace, will the proportion be higher or lower in time of war, and also after war is over? It would be well also to determine what will be the effect on the civilian population.

As the present Great War has only lasted some eight months, and we have accordingly no available statistics on which to base definite conclusions, the absolute effects of war in regard to the incidence of tuberculosis must be largely a matter of conjecture. This fact, however, need not prevent us from indicating some general tendencies at work capable of modifying the causal conditions.

Let us consider the question from the standpoint of (A) THE SOLDIER and (B) THE CIVILIAN.

(A) The Effects of Military Training and Active Service in Relation to Tuberculosis.

If we regard hereditary predisposition as the most important causal factor, both military training and the conditions of actual warfare might well be considered as weeding-out processes, the fittest being those who will survive the strain. As all recruits are exposed more or less to similar climatic and other environmental conditions, it is obvious that the majority of those who fall victims to tuberculosis are necessarily the weakest and least fitted, either by hereditary predisposition, previous disease, or other cause producing lack of resisting power, to withstand the invasion of the tubercle bacillus. The fittest will be those who survive the strain of military service without contracting the disease. If, on the other hand, we regard the matter from the environmental point of view, we must determine to what extent, if any, the conditions of camp life favour or check the incidence of tuberculosis. In other words, *are war conditions more or less favourable than the actual conditions in which the young men of the country live in time of peace?*

Favourable Effects.—From the tuberculosis point of view, the most favourable result of the present war is undoubtedly the impetus which will be given all over the country to the fresh-air movement. In nearly every home, whether in the better-class suburb, the city slum, or the country hamlet, there will be in the stalwart, sun-tanned son or brother a practical example of the value of life in the open air.

It is unquestionably true that the majority of our recruits spend far more time in the open air than when they are engaged on their ordinary occupations. It is equally true that they have much more regular exercise, particularly in the way of physical drill, and this undoubtedly tends to improve the whole bodily physique. Dr. Basil Hughes, R.A.M.C. (T.), has recently pointed out that the majority of voluntary recruits come under entirely new conditions, which he enumerates as follows: (a) They lead a perfectly routine life and have regular outdoor exercise; (b) they come under new sanitary conditions, many of the men being drawn from poor homes where the sanitary standard is low; (c) they come under new conditions of personal cleanliness; and (d) there are new and better conditions of food, which is plentiful, good, and taken at regular intervals.

As regards outdoor exercise, we know that light and air are all-essential to health, and there could not be a greater contrast between the average life of a young man working in a dark, stuffy office, shop, or warehouse, and the drilling on seaside fronts, upland downs, or marching through country districts. There is also the fact which the writer and other observers have frequently noted—that an extraordinary development has taken place in many flat-chested, somewhat weedy-looking men as the result of a few months military training. Some of these men appeared more than likely subjects for tuberculosis, and yet their physique has improved out of all knowledge.

The day before penning this article the writer saw a boy of nineteen from Dalston, who in little over two months in camp had gained over two stone in weight, one inch in height, and had filled out and developed to such an extent that his mother was perfectly astonished at the change that had taken place in the appearance of her previously rather delicate-looking son. This is only one instance of numerous similar cases that have come under the writer's notice.

Unfavourable Effects.—There are, however, other aspects of military environment which may be regarded as predisposing to tuberculous disease. It is sufficient to enumerate a few of the unfavourable conditions, such as exposure to cold and damp; overcrowding in tents, huts, and billets; sleeping on dusty floors, and not infrequently remaining for long hours in wet clothes, etc. The following facts have been brought to the writer's notice: Numbers of men have been billeted in tuberculous houses, where deaths from the disease have occurred, and

where no subsequent disinfection of the house had been carried out. In one instance, five men were billeted in a house where one of the inmates, a child, was ill with well-marked tuberculosis. A medical friend informed me that over 4,000 troops had been billeted in a small country town of some 7,000 inhabitants, a condition of things which would render it quite impossible to carefully select each individual billet. No doubt the special sanitary official makes the most of the facilities at his disposal, and often consults with the local Medical Officer of Health, but as a rule the local police officer and the billeting officer have to find places for everyone, and they just do the best they can. Floors may or may not be cleansed or disinfected, and men are often put to sleep on dusty floors soiled with dried expectoration, containing *Micrococcus catarrhalis*, pneumococci, and even tubercle bacilli. I recently examined a recruit of four months' standing, who told me that all the men in his billet slept on a floor which was but rarely cleansed, and that they were all coughing more or less throughout the night. The experience of my medical friends in the R.A.M.C. has been that tents and huts are much healthier than billets. This is no doubt due to the great exposure to infective dust and to the less efficient ventilation in dwelling-houses.

It must also be remembered that quite a large number of recruits predisposed to tuberculosis have joined the Army, while many subjects of actually existing tuberculosis, sometimes even in an active stage, have left their homes, chest hospitals, and sanatoria, to join the colours.

In my male tuberculous ward in the Royal Hospital for Diseases of the Chest, we recently had no fewer than five cases of well-marked pulmonary tuberculosis belonging to the following regiments: King's Royal Rifle Corps, Royal Inniskilling Fusiliers, Army Ordnance Corps, Reserve Battalion Essex Regiment, and Durham Light Infantry. In one case the symptoms manifested themselves two months after the patient's transference from his barracks to a camp hut. A second was invalided home after nine weeks in the trenches, where he had got wet through. A third broke down after 103 days' training, and after being soaked to the skin every day for a fortnight. A fourth, who was quite well in his tent, began to show symptoms of tuberculous disease after being a few weeks in a billet. The fifth patient, a reservist, had had a history of active disease for two years previous to being called to the colours, tubercle bacilli having been found in his sputum at Victoria Park Hospital two years before; after being in camp for one month during which time he had to do sixteen-mile marches with 90 pounds pack on his back, he broke down and was discharged as being unfit for military service. Such a man ought never to have been permitted to join the colours, but probably in his anxiety to serve his country he

omitted to acquaint the Medical Officer with his previous tuberculous history.

No doubt after the war is over it will be possible to obtain accurate statistics of the number of men discharged unfit as the result of pulmonary tuberculosis, but there is little doubt that the number will be considerable. In the *British Medical Journal* of February 27, Sir Thomas Oliver relates the case of a patient who enlisted as a private in the Royal Army Medical Corps, being attached to the Connaught Rangers, with whom he was sent to the front. There had been a previous history of tuberculous disease. The prolonged strain, loss of sleep, and exposure to wet and cold, ultimately told upon him, and he caught a severe cold, and was invalided home with well-marked signs of extensive involvement of the left side of his lung. Sir Thomas states that this case is probably one of many. Dr. M. E. Rist, at a meeting of the Société Médicale des Hôpitaux de Paris, has described similar cases in the French army; while in *The Times* of February 13 "Eye-Witness" relates the story of a dead German being found with two medical certificates in his pocket stating that he was suffering from consumption. There was also an application from the man's father asking that his son should not be sent on active service as he was suffering from lung trouble. This story suggests that cases of tuberculous soldiers are fairly numerous in the German army.

Sir Thomas Oliver brings out the interesting point that men who are the subjects of tuberculosis have been able to undergo all the hardships of war, and mentions several cases where they have passed through battle unscathed. This fact has deprived tuberculosis of some of its terrors by letting the tuberculous subject feel that his day of usefulness has not yet come to a close, and that he is capable of undertaking more arduous work than had hitherto been imagined. Dr. N. Gebbie, writing from the Killingbeck Sanatorium, Leeds, states that no fewer than forty-seven ex-patients of this sanatorium had joined the Roll of Honour, eight of whom are engaged in active operations at the front, while the others are undergoing a course of strenuous training in this country. He adds that so far all are bearing well the physical exertion and mental strain. One man has been promoted to sergeant's rank, and one, who is a reservist, has returned to his old rank of sergeant in the Royal Scots Greys, while one has been killed in action. One of the cases of *artificial pneumothorax*, now a driver in the Royal Field Artillery, reports himself well, and quite able to take his place amongst his fellows, with the exception of the "double" round the parade-ground.

(B) **Effects on the Civilian Population.**

During the war there has no doubt been a great tendency to stop many forms of activity connected with the anti-tuberculosis campaign. There are unavoidable arguments in favour of reducing expenditure and postponing the building of sanatoria, while the medical staffs of tuberculosis dispensaries and similar institutions have been considerably depleted owing to the demands of military service. The war has had the immediate effect of seriously curtailing the all too limited sanatorium accommodation in the country, owing to the fact that a considerable number of the most modern sanatoria for tuberculosis have been converted into military hospitals. Many county Medical Officers of Health have also been called out to serve in the sanitary departments of the Army, and their important preventive work has consequently been greatly curtailed. In these and other ways tuberculous patients—men, women, and children—cannot have been so rigorously supervised recently as in times of peace, and this will doubtless tend to increase the spread of tuberculous disease. Nevertheless, the chest hospitals and the tuberculosis dispensaries are doing their best, although with reduced staffs, to cope with the heavy demands. It would be a splendid thing if some of our tuberculosis officers and sanitary inspectors were able to allot a certain portion of their time to the supervision of billets, huts, and camps in military areas. They would accomplish much-needed prophylactic work.

In regard to the civil population, the presence of some 50,000 Belgian refugees must not be overlooked. Many of them are known to be tuberculous, and as they are scattered all over the country, the presence of these cases must necessarily have some effect in spreading tuberculous disease among the other inmates of the households and members of the community.

The effect of alcohol might be mentioned in this connection. There has no doubt been a noticeable increase in drinking habits, more particularly among some of the wives and female relatives of soldiers, while many of the recruits themselves have but too often suffered from the effects of injudicious "treating." Alcoholism has been definitely proved to be an important predisposing factor in the causation of tuberculosis; but here, again, we must wait for statistics before coming to any definite conclusion. There has recently been a keen discussion in the columns of the *British Medical Journal* in regard to the question of serving rum to the soldiers in the trenches. It is unnecessary in a scientific journal such as this to enlarge on this point, but the fact that both Russian and French Governments have respectively prohibited the sale of vodka and absinthe is significant, as indicating the possible

trend of future legislative action, which has indeed been already foreshadowed by the Chancellor of the Exchequer as coming within the sphere of political politics.

Conditions after the War.

Here, again, it is impossible to foresee what will be the exact results as regards the future incidence of tuberculosis among our people. It is reasonable to suppose that permanently invalided and crippled men will tend to sink to a lower social level, with a lower standard of nutrition, and this will apply equally to their dependents. Unless some comprehensive scheme, including pensions, and the teaching of suitable remunerative trades to war derelicts is organized, there will inevitably be for many such a social sinking, as will still further tend to an increase in tuberculosis. "The Lord Roberts' Fund" for invalided soldiers and sailors will prove of the greatest value.

Much may be expected from our highly efficient anti-tuberculosis and sanitary services; and it would be a great triumph for the National Insurance Act if the tuberculosis provisions therein prove adequate, not only to check the spread of tuberculosis during the war, but to prevent its spread after the conclusion of peace. The formation of the new Advisory Board of Tuberculosis Experts by the London County Council is fraught with great possibilities of usefulness in the Metropolis.

THE MISUSE OF SANATORIUM BENEFIT.

By A. E. CARVER,

M.A., M.D. (CANTAB), ETC.,

Medical Officer in charge of the General Dispensary's Tuberculosis Clinic,
Birmingham.

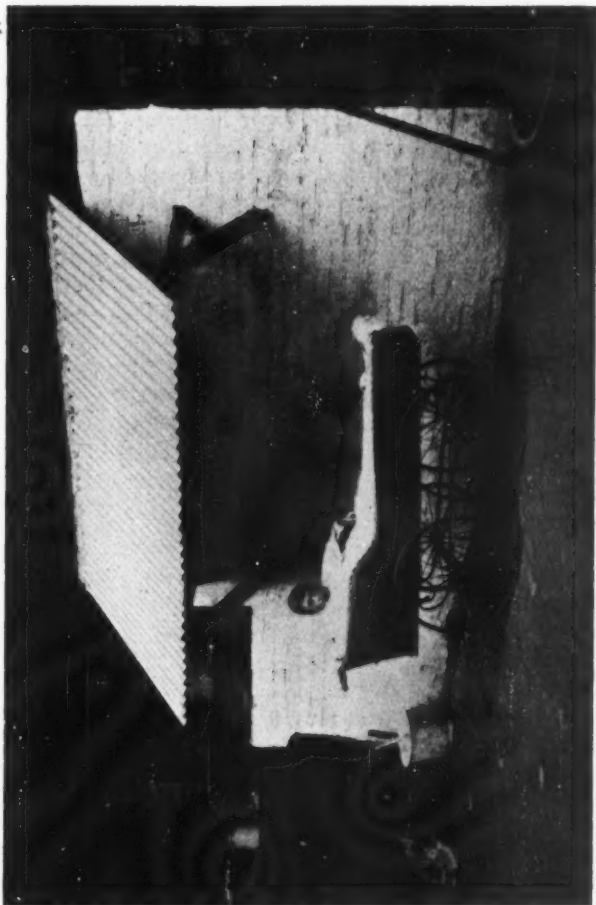
It is the fate of most good movements to be carried to excess, and perverted by the overzeal of their advocates. Thus it has been with the sanatorium movement, which, though it has ceased to support its original valuation, is now being developed beyond its limitations in another direction; and in its present-day guise of a "first-class hotel" for all tuberculous individuals is being worked to the detriment of that type of case which should derive most benefit from it. In the National Insurance Act the term "Sanatorium Benefit" has a deservedly wide application, but I propose here to confine myself mainly to a criticism of the misuse to which sanatorium benefit in the narrower sense of the word is being put at the present time.

In the early days of the movement it was intended that a sanatorium should serve the same purpose as does a fever hospital. It was thought that tuberculous patients, after a relatively short period of treatment as in-patients, would be discharged as cured. Very few, if any, in the light of present-day knowledge and experience, will be found to support this hope of a bygone day. The argument for the routine passage of tuberculous patients through a sanatorium has now shifted its ground, and seems to be that a short residence—say, an average of six weeks—is sufficient so to educate them that on return home they will fling open their windows and generally adopt a hygienic mode of life. It should need but little practical experience to convince any impartial observer that this fond hope is practically never realized. The necessary modicum of practical experience seems, however, usually to be lacking with the officials responsible for the administration of the Act. In a working-class family no one member, as a rule, is allowed to dictate as to the family's method of living; and old customs and inertia are pretty sure to win the day. In any case, the desired reformation could only reasonably be expected when the individual educated is the breadwinner. Now the breadwinner is generally averse to any form of discipline, but being reluctantly forced to admit that it may be a necessary evil in institutional life, he looks upon all the health rules he has heard and seen practised there as so much institutional red tape—on a par with restriction as to smoking, etc.—which he has no intention of submitting to in his own home. Children and others, of course, cannot be expected to initiate any reform on their return home. Thus it comes about that the only argument which can at the present day be advanced in favour of the routine passage of the tuberculous through a sanatorium fails.

Were this all, the matter might be ignored as of small consequence. Unfortunately, however, misuse of the limited sanatorium accommodation has consequences of other and more serious natures. First, it leads to a long waiting list, and thus the type of case which is really in need of institutional treatment is prevented from receiving that prompt admission which may make all the difference to his chances of ultimate recovery. I refer here to a case in an acute condition with temporary incapacity for work, especially where this condition is associated with inadequate means for proper food and attention at home. It is regrettable that where any discrimination is shown it is generally directed against this type of case. The second evil arising from the apotheosis of the sanatorium, as applied to the labouring classes, is that with it goes a corresponding neglect of the patient in his home environment.

The more experience I gain, the more do I realize that the only method of effectively educating the labouring classes in all domestic subjects, of which the prevention of tuberculosis may justly claim to

be one of the most important, is to carry the gospel into the home. In other words, if we are to obtain any appreciable results from our work, it is the family, not the individual, who must be regarded as the unit requiring education. In this connection I should like to



THE DOMICILIARY TREATMENT OF TUBERCULOSIS: AN IMPROVISED SHELTER IN A CITY BACK-YARD.

quote a most valuable passage from the Charity Organization Society's "Report on the Treatment of Tuberculosis in London," which, as a result of careful investigation, states emphatically that "no measure of attack upon the disease has any chance of success unless it begins and ends with the home. Unless the patient is followed there, and both

he and his surroundings are adequately dealt with, the provision of treatment in institutions or by other means is futile." This can only be secured by frequent, persistent, and tactful visiting; and the misuse of the sanatorium tends to obscure this most essential truth, and to lull all concerned into a false sense of security.

The majority of the tuberculous can be treated perfectly satisfactorily from a "dispensary," without ever entering a sanatorium, and the education and supervision not only of the patient but of his family can be carried out efficiently by trained workers acting under the immediate direction of the medical officer in charge. Almost every day I am confronted by unmistakable evidence that far better results are obtained by at once setting about the conversion of a patient's home—with or without the addition of a shelter—into a miniature sanatorium than by temporarily removing him from it. As an example of what may be achieved in this direction, even in a courtyard in a Birmingham slum, I should like to mention the case of a boy suffering from extensive tuberculous disease of the hip and thigh. Two years previously he had been discharged from an institution as incurable. The accompanying illustration shows the minimum shelter which for eighteen months was his only covering, also the carriage in which his mother used to wheel him up to the dispensary for weekly tuberculin injections. Though he began treatment as a helpless cripple, he may now be seen walking about Birmingham with a particularly healthy look upon his face. But he was not the only one to benefit, and on this point I wish to lay special stress. He happened to be well known in the locality, and the success of his treatment, which was carried out in their midst, was a means of converting many to a belief in the value, or at any rate the harmlessness, of fresh air.

Lastly, to review for a moment the financial side of the subject; it is instructive to note that one trained nurse at a salary of, say, £2 per week, can easily supervise fifty or more families, while a similar expenditure would do little more than provide for a single individual patient in a sanatorium. Also, the loss of wages which is unnecessarily entailed by the routine use, or rather misuse, of the sanatorium is a serious matter, and certainly deserves careful consideration, for it may involve allied workers, as well as the tuberculous individual primarily affected. I am convinced, therefore, that the now prevalent anxiety of responsible officials indiscriminately to pass all the tuberculous, or even the majority of them, through a short sanatorium course as a matter of routine is prejudicial in many ways to the best interests of the whole community.

INSTITUTIONS FOR THE TUBERCULOUS.

THE OPEN-AIR SCHOOL, KNOWLE, BRISTOL.

OPEN-AIR schools, like sanatoria, have come to stay. During the last few years means and measures for open-air education and treatment have made rapid progress.¹ Many new establishments for children on open-air lines have been projected or are in course of development. Through the courtesy of Mr. B. Wakefield, Licentiate R.I.B.A., of 14, Orchard Street, Bristol, we are enabled to give a description, and illustrations with plans, of the new open-air school recently opened at Knowle, Bristol. Mr. Wakefield, as architect, has provided a fine school, which deserves to be seen and studied by school doctors and



THE OPEN-AIR SCHOOL, KNOWLE, BRISTOL: EXTERIOR OF SCHOOL.

all interested in the management of tuberculous and tuberculously-disposed children. We give the description of the school in Mr. Wakefield's own words: "The inception of the school was due to, and was carried out (with funds raised by private efforts) by, a small Committee who felt that there was great need for a school of this nature in Bristol. They also hoped that by carrying through the pioneer work the local Education Committee might be led to provide similar schools in different districts of the city, after the results and statistics obtained from the working of this one had demonstrated the undoubted value of such institutions for tuberculous and ailing children.

¹ See the recently-issued "Year-Book of Open-Air Schools and Children's Sanatoria," edited by T. N. Kelynack, M.D., and published by Messrs. John Bale, Sons, and Danielsson, Ltd., 83-91, Great Titchfield Street, Oxford Street, London, W. 1915. Price 7s. 6d. net.

The Committee were exceedingly fortunate in obtaining a site which possessed practically all the features necessary for an open-air school. Situated on the south-west outskirts of the city, and so being com-



KNOWLE OPEN-AIR SCHOOL : REST-SHED.

paratively free from smoke and fumes, as the prevailing winds are south-west, it is within 100 yards of the end of a electric-car route, and is about 200 feet above sea-level. The school is on a hillside which

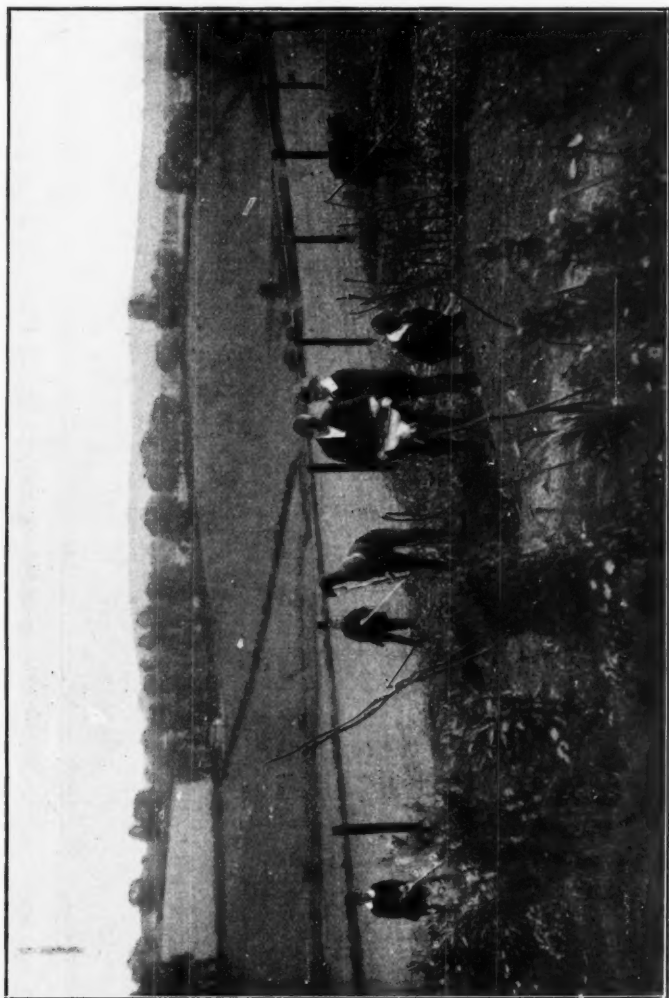
falls rapidly to the south-east and south, and less rapidly to the south-west, and rises to the north-east and north-west. There is beautifully wooded open country for miles to the south-east, south, and south-



KNOWLE OPEN-AIR SCHOOL: OUTDOOR CLASSES.

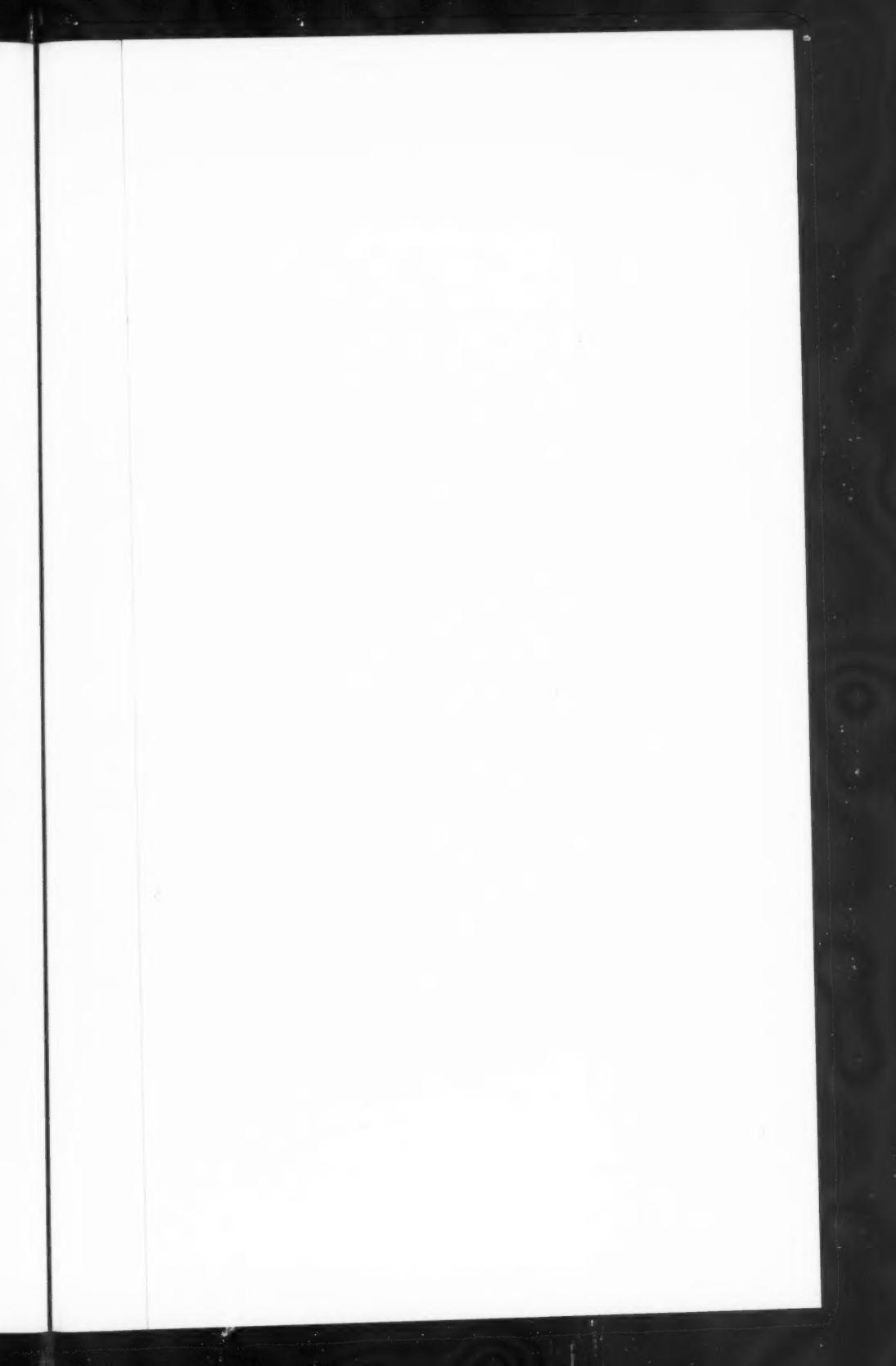
west, with splendid views of the Mendip Hills in the distance. The open nature of the site may be gathered from the accompanying illustrations, 'Outdoor Classes' and 'Gardening.' In planning the

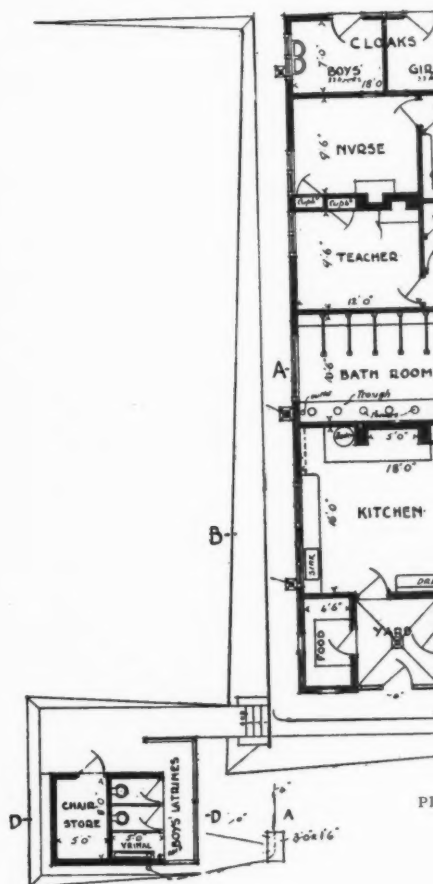
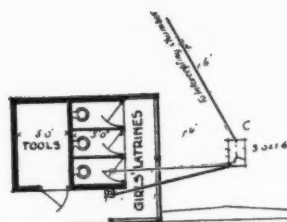
school, the endeavour has been to obtain the maximum amount of sunlight and air, and yet to screen the classroom and rest-shed from cold winds. The building was accordingly schemed in the form of the

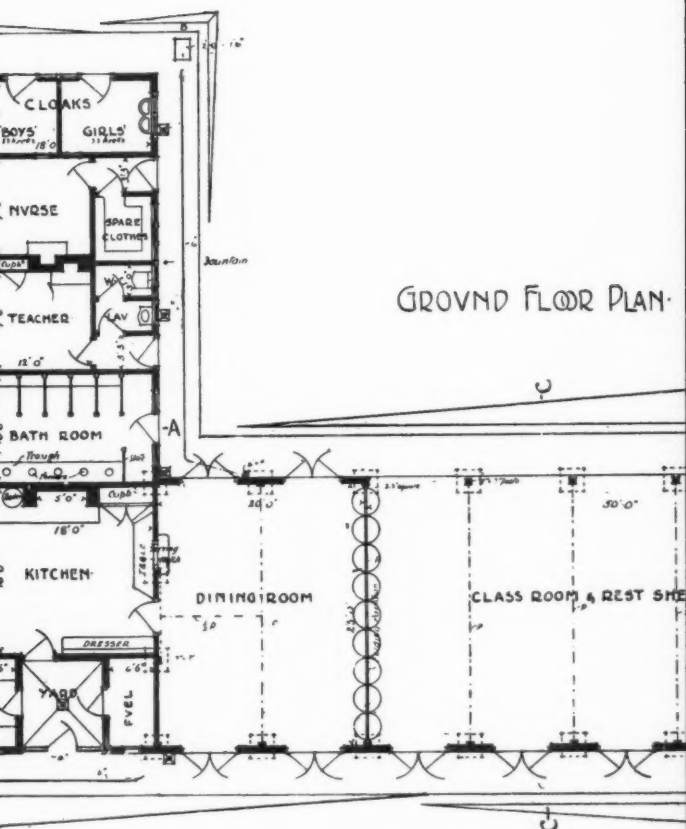


KNOWLE OPEN-AIR SCHOOL: GARDENING.

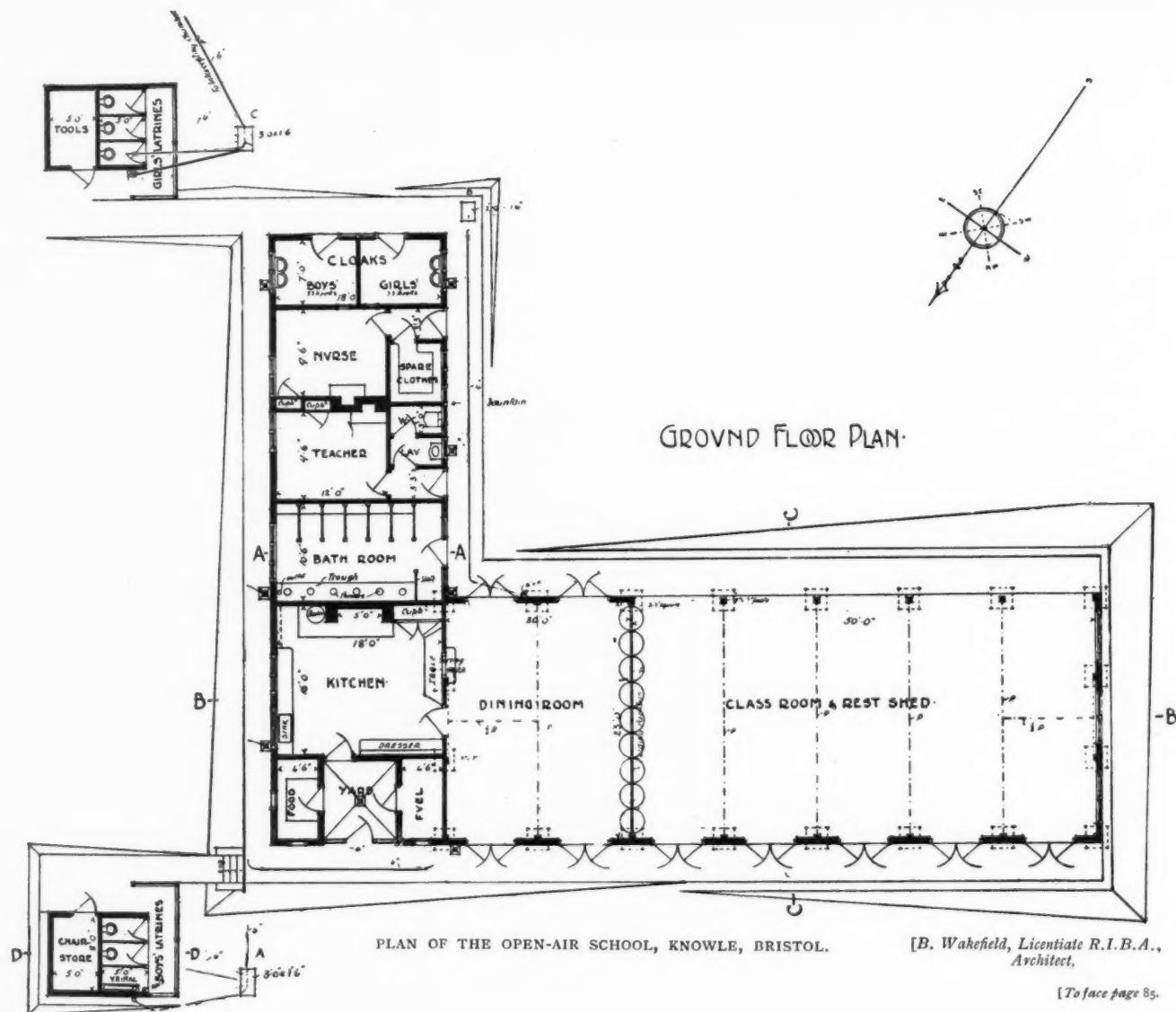
letter L, with the dining-room and classroom and rest-shed facing a little south of south-east, so obtaining exposure to the morning sun, and screened by the administrative portion of the building, which







PLAN OF THE OPEN-AIR SCHOOL, KNOWLE, BRISTOL.



faces north-east. The school comprises a classroom, rest-shed, dining-room, bathroom, nurses' and teachers' rooms, clothes store, boys' and girls' cloakrooms and offices, kitchen, larder, and stores for fuel, rest-chairs, and tools. The dining-room and classroom and rest-shed, obtain direct sunlight during the whole of the day, and all other rooms used by the children during some portion of the day. The south-east side of classroom and rest-shed is open, the end and north-west side being enclosed, the former fitted with windows, and the latter with French casements. Opening fanlights, carried up the full height of room, are fitted over the windows and French casements, and on these being thrown open the classroom and rest-shed become practically an open shed. The south-east side of shed is fitted with roller-blinds to protect the open side from driving rain. The dining-room is fitted with similar French casements and fanlights, and thorough cross-ventilation is obtained by the use of the latter, when the doors are closed during inclement weather. The dining-room is divided from the rest-shed by a swivel-hung glazed partition, which folds back to each side of room, giving an unimpeded floor-space of 1,750 square feet. The bathroom is fitted with the necessary dressing-cubicles and six shower-baths. Baths of any desired temperature can be given, the service-pipes being provided with a mixing-valve fitted with a thermometer. The advantage of shower-baths over slipper-baths is that the risk of contagion is reduced to a minimum. A slipper-bath should also be provided, in addition, to enable dirty children to be bathed on admission to the school. Hot water is laid on to the lavatory basins in cloakrooms—a rather necessary provision where the children are taught gardening, manual instruction, Nature study, etc. The building had to be soundly constructed, owing to the very exposed nature of the site, and yet rigid economy was imperative. No claim is therefore made that the school is all that such a school should be, bare essentials only being provided, and many improvements might have been made had the funds permitted. Nevertheless, Sir George Newman, Chief Medical Officer of the Board of Education, when paying a visit of inspection, expressed a very favourable opinion on the school. The walls of the building were constructed of timber-framing bolted down to brick foundation walls, the framing being boarded and felted on the outside, and then sheeted with weather-boarding; all timber exposed to the weather was treated with a preservative. The inside walls, in the enclosed portion of the building, were plastered; the inside timbers and boarding of the walls in the rest-shed were left exposed and white-limed. This form of construction has the advantage of being warmer and dryer than a 9-inch brick wall. The roofs are boarded and felted, and covered with sand-faced pantiles. All the floors were jointless, and the material was brought 4 inches up the walls to form a coved skirting, thus enabling them to be hosed down if desired. The walls of kitchen and bathroom were finished in petrifying enamel, all other plastered walls being dis-tempered. The report on the first year's working of the school, published a short time ago, shows excellent results, and it is a source of great gratification to all that the objects for which the school was initiated have been so fully realized. The accompanying illustrations are taken from this report, the blocks being kindly lent by the Committee."

THE TUBERCULOSIS DISPENSARY, ST. BARTHOLOMEW'S HOSPITAL.

DR. HERBERT B. GIBBINS, the Tuberculosis Officer of the above dispensary, has kindly favoured us with the following notes regarding this new centre for tuberculous cases: For some time the Sanitary Committee of the Corporation of the City of London has had under consideration the establishment of a Tuberculosis Dispensary, and finally they decided to make this available not only for residents in the City, but also for the great mass of workers who, although non-residents, spend a number of hours daily within its boundaries. In carrying out this scheme, which has the approval of the Local Government Board, the Governors of St. Bartholomew's Hospital have heartily co-operated, with the result that on November 3, 1914, the dispensary was opened within the hospital, but as a separate department, with a medical officer and nurse specially appointed for the work. The administrative side is controlled by the Public Health Department of the Corporation, so that the work is co-ordinated with the public health work of the City, while the medical side is controlled by the staff of the hospital. All the resources of St. Bartholomew's are available for diagnosis and treatment, including the special departments, as pathological, X rays, etc. Patients are seen from 12.30 to 2.30 p.m. on Tuesdays and Fridays, while those unable on account of their work to come at these hours may attend between 6 and 7 p.m. on Thursdays; these times have been chosen as likely to be most suitable for City workers. Both insured and uninsured persons are eligible, and no recommendation of any kind is required. Patients are not visited at home, and any attendance they may require there must be obtained from their usual private medical attendant, with whom the medical officer of the dispensary communicates. It is believed that many cases of tuberculosis will be detected in their earliest stages, and with this object in view the examination of suspected cases and "contacts" is an important part of the work; while the value of the dispensary as a teaching centre is not to be overlooked.

NOTICES OF BOOKS.

THE TUBERCULOSIS DISPENSARY.

IN the organized campaign against tuberculosis, the so-called "dispensary" has been given a prominent place. In many schemes it forms a kind of clearing-house as well as a centre for selection, domiciliary treatment, examination of contacts, and after-care. In some few instances the designation of "tuberculin dispensary" has been assumed, and treatment by tuberculin has been made a special feature. A valuable record of work carried out from this standpoint has just been published by Dr. Hilda Clark.¹ The results here presented deal with (1) the value of tuberculin treatment as shown in two consecutive series of cases—viz., at Street and Portsmouth; (2) the position of tuberculin treatment in schemes designed to deal with the special problem of tuberculosis among working-class patients; (3) the incidence, course, and response to treatment, among the population of Street, a manufacturing village in Somerset, where peculiar opportunities made thorough investigation possible. The author's conclusions in regard to the value of tuberculin may best be given in her own words: "Tuberculin can be used with apparent good effect in nearly every case in which the condition, as judged by ordinary clinical methods, allows a reasonable possibility of improvement. In a large proportion of cases, where the disease is at an early stage or limited in extent, one or more courses of tuberculin, without other measures than attention to ordinary hygiene, results in apparent cure. A course of tuberculin is a justifiable and safe prophylactic for those cases which do not present bacteriological proof or strong clinical evidence of active tuberculosis, but in which the presence of latent mischief is suggested by the occurrence of a reaction to tuberculin, especially if this be accompanied by any symptoms that are not promptly removed by attention to hygiene or the removal of other probable causes." The author then proceeds: "If these conclusions be accepted, it will be admitted that the provision for the skilled administration of tuberculin should be second only to measures of education, housing, sanitation, and general hygiene, in a scheme for the eradication of tuberculosis, and that a fair trial should be given to this remedy as the first step in the treatment of individual cases, so that other more expensive and troublesome methods may be reserved, and given without stint, for those who are found to require them." The greater part of the book is given up to a record of cases, with tabular summaries of the chief features of the 256 cases investigated. Much praise is due to the painstaking care with which the records of this research have been prepared. The volume may well serve as a model of thoroughness

¹ "The Dispensary Treatment of Pulmonary Tuberculosis." By Hilda Clark, M.B., B.S. Lond., late Hon. Medical Officer, Street Tuberculin Dispensary, and Tuberculosis Medical Officer to the County Borough of Portsmouth. Pp. vii + 279, and 20 fold-in tables. London: Baillière, Tindall and Cox. 1915. Price 15s. net.

and systematic precision, and, needless to say, the work should be studied without prejudice by every tuberculosis officer. The volume is got up in handsome form, and much care has been given to the setting out and clear printing of the tables.

NEW WORKS ON TUBERCULOSIS.

The tuberculosis problem is a human problem with many aspects, medical, sociological, economic, and personal. Hitherto scant attention has been given to what is conveniently designated the after-care of the consumptive. This question has been dealt with in a recent brochure¹ written by Dr. H. Vallow, and bearing the ambiguous title of "The Inevitable Complement." The author advocates the formation of Care and After-Care Committees, and defines their objects as—(1) To prevent relapse; (2) to combat the fear of infection felt by employers and fellow-workmen; (3) to look after the home and the family, both while the breadwinner is away at the sanatorium and after he returns; (4) to prevent the development of the loafer. It is suggested that such a committee should be composed of representatives of the Health Committee, the Insurance Committee, the various influential charitable societies, religious bodies, local organizations working for the welfare of the working classes, the Chamber of Trades, private employers, and medical practitioners. The duties of the committee are thus defined: Finding suitable occupations, necessary visitation and advice, provision of help in the home, provision of beds and bedding, provision of extra nourishment, payment of expenses incurred in moving to a better house, impressing upon the patient the necessity of undergoing treatment, combating the fear of infection felt by employer and fellow-workmen, and such other duties as experience will from time to time determine. Lists are given of what are considered suitable occupations for arrested cases. The manual is very suggestive and thoroughly practical. It is dedicated to the late Dr. E. F. Trevelyan.

Heliotherapy has been proved to be of much service in the treatment of certain forms of tuberculosis, particularly those met with in children. A valuable little monograph² on the subject has recently been written by Dr. Jaubert of Hyères, in which the essentials of "la cure solaire" and "les bains d'air" are conveniently summarized. The physiological and therapeutical aspects of insolation are discussed, and indications for the application of heliotherapy explained, and then follow practical sections on technique and the employment of adjuvants. The manual is attractively illustrated.

Tuberculosis in young subjects is now known to be of frequent occurrence, and increasing attention is being devoted to measures for the effectual treatment of tuberculous and pre-tuberculous conditions in infancy and childhood. A valuable monograph on the intradermal

¹ "The Inevitable Complement: The Care and After-Care of Consumptives." By Harold Vallow, M.D., Chief Clinical Tuberculosis Officer, Bradford, Yorks. Pp. viii + 66. London: John Bale, Sons and Danielsson, Ltd., 82-91, Great Titchfield Street, W. 1915. Price 1s. 6d. net.

² "La Pratique Héliothérapique." Par le Dr. Jaubert (d'Hyères), Médecin de l'Hôpital René Sabran et de l'Établissement Anne Marie. Pp. 96, avec 19 figures dans le texte. Paris: J. B. Baillière et Fils, 19, Rue Hautefeuille. 1915. Prix 1 fr. 50 c.

administration of tuberculin has been written by Dr. Lucien Jeanneret.¹ Professor Hutinel in his preface strongly advocates Dr. Jeanneret's method, and declares: "L'étude qu'il a faite ouvre aux médecins une voie dans laquelle ils peuvent s'engager sans appréhension, car la méthode n'est nullement nocive." The monograph contains information regarding the occurrence and forms of tuberculosis met with in young subjects, and discusses their sensibility to tuberculin. A particularly valuable summary is provided of "les Opinions des Pédiâtres sur la Tuberculinothérapie." But the main portion of the volume is devoted to a record of the author's own researches and a description of his method of "l'Intradermotuberculinisation." There is an extensive bibliography.

Dr. W. C. Minchin's monograph on the use of oleum allii in tuberculosis and lupus has passed into its second edition.² The author explains that it was thought that the sole active ingredient of allyl-oil was allyl sulphide, but that it has been shown also to contain volatile terpenes "to which its beneficial action may be due." It is further stated that "even the atmosphere in the vicinity of large quantities of growing garlic, especially when it is nearing maturity, has a salutary effect upon the tuberculous." Dr. Minchin's views and methods of treatment have found favour with many practitioners, and the evidence presented in his monograph is worthy of careful consideration and should be scientifically tested. The book also contains a description and illustration of the author's modified form of the Burney Yeo oro-nasal inhaler, which for many cases undoubtedly offers distinct advantages.

RURAL HOUSING.

The problem of tuberculosis is closely associated with the problem of housing. This is certainly the case in both urban and rural districts. A very valuable work on housing in country areas³ has just been issued by Dr. William G. Savage, Medical Officer for the County of Somerset, and should be studied, not only by Medical Officers of Health and tuberculosis officers, but by all thoughtful men and women concerned for the improvement of conditions of life in the country. The book is a valuable contribution to State Medicine, and it is written in so attractive a style and is so effectively illustrated that all students of social problems will find it of service. The author provides an interesting historical sketch of the evolution of the rural housing problem, indicates the influence of rural housing laws, describes existing housing conditions, and then proceeds to describe the conversion of the in-

¹ "La Tuberculose de l'Enfant: Traitement de ses Formes Médicales et Chirurgicales par la Tuberculine." Par le Dr. Lucien Jeanneret, 1^{er} Créat de la Faculté de Médecine, Ancien Assistant de l'Institut Pathologique et de la Clinique Infantile de Lausanne, Chef de Clinique à l'Hôpital des Enfants de Bâle (Suisse). Préface de M. le Professeur Hutinel, Professeur de Clinique des Maladies des Enfants à la Faculté de Médecine de Paris. Pp. viii + 204. Paris: Librairie J. B. Baillière et Fils. 1915.

² "The Treatment, Prevention, and Cure, of Tuberculosis and Lupus with Oleum Allii." By William C. Minchin, M.D., late Medical Officer to the Kells Union Hospital and Fever Hospital. Second edition. Pp. xii + 114, with 8 illustrations. London: Baillière, Tindall and Cox. 1915. Price 5s. net.

³ "Rural Housing." By William G. Savage, B.Sc., M.D., D.P.H., Medical Officer of Health for the County of Somerset. Pp. 297. London: T. Fisher Unwin, 1, Adelphi Terrace, W.C. 1915. Price 7s. 6d. net.

sanitary house into a satisfactory dwelling. A good account is given of the progress attained in regard to the housing survey required to be carried out under the 1909 Act throughout the country. The prevalence of housing shortage is forcibly explained, and also the inadequacy of existing laws and requirements to remove the housing shortage. Dr. Savage's work is constructive, for he indicates what must be the requirements of new cottages in rural areas, and, after showing the close association of housing and health, a valuable concluding chapter deals with the solution of the rural housing problem. With regard to the influence of improper housing on tuberculosis, Dr. Savage says: "The relationship of tuberculosis to conditions of housing is, I believe, an intimate one, although it cannot be stated statistically, since tuberculosis is a disease which closely affects wage-earning capacity, so that tuberculous families tend to become poor and so occupy the worst houses. Damp, ill-ventilated houses, by reducing resistance to infection, predispose those inhabiting them to tuberculosis. Important as is this fact, the influence of diminished accommodation and air-space in houses is a far greater factor in spreading the disease. Pulmonary tuberculosis is an infectious disease, and one in which the chances of transmitting infection to others are mainly influenced by the dosage and the degree of susceptibility of those exposed. In a large proportion of the existing cottages for agricultural labourers it is practically impossible to effectively isolate cases of tuberculosis. In advanced cases, proper control of the discharges is very difficult to insure, and under existing conditions the other occupants are daily exposed to heavy risks of infection. The larger the cubic space and the more efficient the ventilation, the greater is the dilution of the infectious material, with corresponding diminution of risks of infection. Experience, and particularly recent experience, is showing conclusively how large a proportion of the home 'contacts' of pulmonary tuberculosis (phthisis) cases are themselves infected with tuberculosis."

WORKS FOR PRACTITIONERS AND PHARMACISTS.¹

The works of Sir William Whitla are well known to all who have to deal with matters relating to *materia medica* and therapeutics. We well remember using the first edition of his "*Elements of Pharmacy, Materia Medica, and Therapeutics*," which appeared in 1881. Since that date the volume has passed through nine editions, and to-day we welcome the arrival of the tenth, making an issue of 42,000 of this much-appreciated work. The advent of the new British Pharmacopœia has necessitated changes on every page of the previous edition, but the long-approved form is still maintained. The first part deals with pharmaceutical processes; then follow general directions for the administration of medicines. About 150 pages are devoted to a compact and effective statement regarding the chief features of official pharmacopœial preparations. Part IV. is allotted to therapeutics, and here the alphabetical arrangement is continued. The concluding part

¹ "*Elements of Pharmacy, Materia Medica, and Therapeutics*." By Sir William Whitla, M.A., M.D., LL.D.: Professor of *Materia Medica* and Therapeutics, Queen's University, Belfast; Senior Physician, Royal Victoria Hospital; Author of "*Dictionary of Treatment*" and "*Practice of Medicine*." Tenth edition; forty-second thousand. Pp. xii+680. London: Baillière, Tindall and Cox, 8, Henrietta Street, Covent Garden, W.C. 1915. Price 9s. net.

provides a very full description of non-official remedies, and this alone makes the work an indispensable one for all practitioners. This new edition of Professor Whittle's most practical volume will not only renew its youth and powers for service, but will add to its popularity among old admirers, and will win fresh friends among recently qualified practitioners and new medical students.

"The Extra Pharmacopœia"¹ of Martindale and Westcott makes a reappearance in a sixteenth edition. This work is so well known, and is so universally appreciated by British doctors and pharmacists, as to be beyond the influence of a reviewer's praise or blame. The new edition appears in two volumes, in the familiar form which is so compact and convenient for all. The work has been rigorously revised and thoroughly brought up to date and in conformity with the new British Pharmacopœia. The first volume contains all necessary information relating to the chemical and therapeutical properties of extra-pharmacopœial chemicals and drugs, particulars as to the preparation and employment of vaccines and antitoxins, and organo-therapy. There is also a lengthy supplementary list of drugs. We would specially direct attention to the excellent summary of "Tuberculin Dispensary Treatment," and the very full résumé of references to tuberculin and treatment. If only for these sections, every tuberculosis officer should possess the "Extra Pharmacopœia." But in vol. ii. there is much else that will be of the greatest assistance to all dealing with tuberculosis problems in the research and pathological departments of sanatoria, as well as in the practical work of tuberculosis dispensaries. It deals specially with the results of analytical and experimental investigations, and includes bacteriological and clinical notes relating to tuberculosis and other diseases, data as to water and milk analyses, analytical memoranda, particulars regarding British health resorts, notes on sterilization, animal organo-therapy, and numerous analytical addenda to materia medica. We have nothing but admiration and praise for these wonderful little volumes, which are among the most indispensable books for the armamentarium of every busy tuberculosis officer and all other medical practitioners.

"Squire's Pocket Companion to the British Pharmacopœia" is another reference work which promises to increase in popularity and usefulness.² The first edition appeared in 1904, and was due to the division of the older "Squire's Companion" into two volumes, necessitated by the growth of the work. The "Pocket Companion," of which the second edition is now available, is an attractive volume, convenient in size and shape, leather-bound, and clearly printed on thin but good paper. It is a very complete, compact, and well-arranged reference work relating to all matters likely to arise in connection with prescribing and dispensing. It provides a systematic and exhaustive

¹ "The Extra Pharmacopœia" of Martindale and Westcott. Revised by W. Harrison Martindale, Ph.D., F.C.S., and W. Wynn Westcott, M.B., D.P.H. Sixteenth edition. Pp.: Vol. i., xl+1113. Price 14s. net. Vol. ii., viii+469. Price 7s. net. London: H. K. Lewis, 136, Gower Street, W.C. 1915.

² "Squire's Pocket Companion to the British Pharmacopœia," comparing the strengths of its various preparations with those of the United States, French, and German Pharmacopœias, to which are added non-official preparations and practical hints on prescribing and dispensing. By Peter Wyatt Squire. Second edition. Pp. xvi+1040. London: J. and A. Churchill, 7, Great Marlborough Street. 1915. Price 10s. 6d. net.

review of all alterations and additions to the 1914 issue of the British Pharmacopœia. The general plan of arrangement is alphabetical, following much the lines of the parent work. Ever since 1864 special attention has been given by the compilers of "Squire's Companion" to problems of solubility, and this feature has been maintained in the present volume. The doses are given in both the Imperial and Metric systems. The busy doctor will specially appreciate the serviceable Prescribing Notes. These, like all else in the book, have been thoroughly brought up to date. Particular mention must be made of the section on therapeutic agents of microbial origin, prepared by Professor R. Tanner Hewlett. References are given to important communications relating to anti-tubercle serums, Spengler's I.K. serum, contra-toxin, and the various forms of tuberculins. There is also a section on tuberculin for diagnosis, and one on opsonins. It should also be mentioned that there are useful particulars regarding home and foreign spas. Doctors will also appreciate the therapeutical classification of remedies and the list of remedies employed in special ailments.

Lucas's "Book of Prescriptions" is another well-known and long-appreciated work which has undergone rejuvenescence.¹ The volume has been subjected to a rigorous revision; and, although maintaining its old form and size, it has been fully brought up to modern standards. Attention is directed in the preface to the fact that "in accordance with modern nomenclature the term "mil" has been substituted for "cubic" centimetre. Dr. Latham indicates in his introduction that the volume is primarily intended to assist the senior student in his duties at the hospital. "This little work will supply a real want of the medical student of to-day if it is regularly used in ward and out-patient work"; but if we mistake not, the book is more likely to be used by recently qualified medical practitioners, most of whom badly stand in need of such experienced aid as this serviceable little volume is able to afford.

Medical officers of Children's Sanatoria and others who have to advise in regard to the treatment of sick children will be glad to know that a new edition of Dr. L. Freyberger's excellent "Pocket Formulary" is now available.² This compact little manual provides the busy practitioner and the senior student with a reliable and conveniently arranged guide to the treatment of disease in young subjects by means of drugs. The description of medicaments are arranged in alphabetical order, with full particulars regarding properties, therapeutics, incompatibles, doses, etc., and useful formulæ are given. A particularly serviceable feature is the therapeutic index. The book is admirably got up.

Messrs. Jewsbury and Brown, the well-known manufacturers of Mineral Waters and Aerated Beverages and Non-Alcoholic Cordials,

¹ "The Book of Prescriptions, with Notes on the Pharmacology and Therapeutics of the More Important Drugs, and an Index of Diseases and Remedies." By E. W. Lucas, F.I.C., F.C.S., Pharmaceutical Chemist. With an Introduction by Arthur Latham, M.A., M.D., F.R.C.P. Tenth edition. Pp. xv + 375. London: J. and A. Churchill, 7, Great Marlborough Street. 1915. Price 6s. 6d. net.

² "The Pocket Formulary for the Treatment of Disease in Children." By Ludwig Freyberger, J.P., M.D., M.R.C.P., M.R.C.S., Barrister-at-Law. Fourth Edition, revised and enlarged and adapted to the British Pharmacopœia. With an Appendix on Poisons, their Symptoms and Treatment. Pp. xv + 260. London: William Heinemann, 21 Bedford Street, W.C. 1914. Price 7s. 6d. net.

and the proprietors of the "Stretton" Natural Mineral Water, have just issued a little volume of "Posological Tables of the British Pharmacopœia, 1914," which will be invaluable to medical practitioners and pharmacists.¹ In convenient tabular form it shows at a glance the doses and strengths of official substances in the new British Pharmacopœia as compared with the British Pharmacopœia of 1898.

A new edition of Mr. F. Lawson's "Manual of Organic Materia Medica" has recently been issued.² It provides in convenient form the essentials regarding the chief medicaments in use. Students will know how to appreciate this aid to examinations.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Medical superintendents of sanatoria and other experts devoting themselves to the study and care of tuberculous cases are in danger of taking restricted views of the problems which face them. Particularly is this the case with non-tuberculous lesions of the chest. As a corrective to this mental myopia, we would recommend the recently published work of Dr. F. T. Lord, which provides a particularly succinct but very valuable account of the chief non-tuberculous diseases of the bronchi, lungs, and pleuræ.³ In well-arranged sections and in crisp, lucidly expressed sentences, the essentials of pathology, symptomatology, and treatment of various chest affections are given. Throughout the work references are provided as footnotes. The work is thoroughly up-to-date, and supplies the busy practitioner with just the information necessary for efficient service. Good descriptions are provided of bronchiostenosis, asthma, the various forms of bronchitis, bronchiectasis, and bronchial blastomycosis. In the section devoted to diseases of the lungs are descriptions of the different forms of pneumonia, and particularly good accounts of pulmonary syphilis, actinomycosis, streptothricosis, blastomycosis, aspergillosis, and lesions due to animal parasites. The numerous illustrations add considerably to the value of the work.

Dr. T. Stacey Wilson has published a handsome volume of clinical studies on Heart Failure, based on thirty years of continuous observations of cardio-vascular conditions.⁴ This suggestive work deserves the consideration of all physicians, for it not only indicates new methods which may be employed in the bedside investigation of cardiac cases, but advances new theories and novel hypotheses not expounded in

¹ We understand a copy of "Posological Tables of the British Pharmacopœia, 1914," will be sent free of charge to medical practitioners making application to the publishers, Messrs. Jewsbury and Brown, Ardwick Green, Manchester.

² "Organic Materia Medica." By Frederick Lawson, B.Sc., Ph.C. Revised by Harry Berry, Ph.C., F.C.S. Second edition. Pp. 42. Manchester: The Northern College of Pharmacy, 100-102, Burlington Street. 1914. Price 2s. 6d.

³ "Diseases of the Bronchi, Lungs, and Pleuræ." By Frederick T. Lord, M.D., Visiting Physician, Massachusetts General Hospital and the Channing Home for Consumptives. Pp. 300, with 93 figures and 3 coloured plates. Philadelphia and New York: Lea and Febiger. 1915. Price \$5.00 net.

⁴ "The Early Diagnosis of Heart Failure, and Other Essays on the Heart and Circulation." By T. Stacey Wilson, M.D. Edin., F.R.C.P. Lond., Senior Physician to the General Hospital, Birmingham; Lecturer on Medicine in the Dental School of the University of Birmingham. Pp. xx+596, with over 130 original diagrams and 30 cardiac tracings. London: Smith, Elder and Co., 15, Waterloo Place, S.W. 1915. Price 12s. 6d. net.

ordinary textbooks. The work is divided into four parts, with a concluding section devoted to summaries and indexes of arguments and facts relating to the distensibility of the heart wall, cardiac failure with and without enlargement, the early diagnosis of heart failure in later life, compensatory diminution of the blood-volume, the auriculo-venous reservoir, and compensatory phenomena in connection with the heart and bloodvessels. There is also an excellent subject index. The book is plentifully illustrated with diagrams and tracings.

The latest manual of hygiene for students preparing for the Diploma of Public Health and other examinations is that of Dr. W. J. Wilson, and is based on lectures delivered during the past seven years in the Queen's University, Belfast.¹ It is intended specially to meet the needs of students of medicine, but it will be of service to all interested in the problems of Public Health. The work provides in succinct form and in clearly expressed language the essential facts and procedures relating to infection and immunity, heredity and eugenics, air, soil, water, food, buildings, warming, lighting, and ventilation, and disposal of excrementitious material. There are excellent sections on personal, school, and industrial hygiene, communicable and tropical diseases, disinfection, and the prevention of infectious diseases. The concluding chapters deal with sanitary law and vital statistics. A good summary is given of the chief points regarding tuberculosis. The volume is one which may be warmly commended, for it provides within manageable dimensions a reliable and interesting introduction to the principles and practices of Preventive Medicine and Public Health.

Professor Theodore Shennan's admirable work on "Post Mortems and Morbid Anatomy" is one which Tuberculosis Officers and Medical Superintendents of Sanatoria and Hospitals will do well to procure and study with care.² It is a work which even skilled pathologists will know how to appreciate. During recent years so much attention has been devoted to bacteriology, pathological chemistry, and experimental research, that the importance of post-mortem investigations have been somewhat disregarded. In only too many sanatoria post-mortem examinations have been rather discountenanced than encouraged. It should be insisted that whenever possible a post-mortem examination should be made. The best clinicians are usually those who base their work on an extensive and accurate knowledge of morbid anatomy. Dr. Shennan's fine volume is undoubtedly the most complete and serviceable of modern guides to the conduct and interpretation of the findings of an autopsy. Detailed instructions are given regarding the carrying out of a post-mortem examination, with full directions for the systematic inspection of the dead body and the investigation of all organs and structures. The work is plentifully supplied with illustrations, reproductions of photographs (for the most part of photographs

¹ "Students' Textbook of Hygiene." By W. James Wilson, M.D., D.Sc., D.P.H., Bacteriologist to the Counties of Down and Antrim; Lecturer in Hygiene and Public Health, Queen's University, Belfast. Pp. xxx + 270. London: William Heinemann, 21, Bedford Street, W.C. 1915. Price 8s. 6d. net.

² "Post Mortems and Morbid Anatomy." By Theodore Shennan, M.D., F.R.C.S.L., Professor of Pathology in the University of Aberdeen, late Pathologist to the Royal Infirmary, Edinburgh, and Lecturer on Pathology and Bacteriology in the School of Medicine of the Royal Colleges, Surgeons' Hall, Edinburgh. Pp. xv + 496, with 3 plates and 206 figures. London: Constable and Co., Ltd., 10, Orange Street, Leicester Square, W.C. 1912. Price 18s. net.

taken by the author or his assistant). Another praiseworthy feature is the useful bibliography of recent original papers. The volume is dedicated to Mr. Charles W. Cathcart. We congratulate all concerned in the production of this handsome and thoroughly practical volume. It is admirably printed, and the general get-up is all that could be desired. It is a credit to British pathology, and Edinburgh may well be proud of a work which so ably embodies the best in Edinburgh methods, as well as serving as a reliable exposition of the experience of other schools, both at home and abroad.

English medical women, during these days of severe stress and strain of war, are coming into their own, and, it must be admitted, are abundantly justifying themselves. Many are doing excellent work in the organization and administration of tuberculosis work. All interested in the evolution of women's part in medical science and art should read Miss Bennett's picturesque history of the movement.¹ It deals with the difficulties, disappointments, and unbounded courage and resource of the pioneers, the founding of various institutions through women's enterprise, and affords delightful glimpses of well-planned work ably carried on during periods of peace and days of war. All medicals and friends of medical women should read Miss Bennett's clever little book.

In these days, when many thoughts and most actions are directed to war and its consequences and complications, Mr. Fitzwilliams' new manual of the science and art of nursing should be in the hands of all nurses and orderlies and Red Cross workers engaged in war service. The work is based on the author's lectures and demonstrations to nurses at St. Mary's Hospital and Paddington Green Children's Hospital, and Non-Commissioned Officers and Men of the 1st City of London Field Ambulance. Experience gained in the examination of candidates for Red Cross certificates has led the author to arrange his book so that the common diseases are associated with the anatomical and physiological description of the organs concerned. The manual has been prepared with a real understanding of the needs and limitations of those for whom it is intended. It is just the work for the requirements of to-day, and may be unreservedly recommended. Medical practitioners who are giving lectures to nurses or conducting first-aid and home-nursing classes will find Mr. Fitzwilliams' book of the greatest assistance.²

Husband's manual on "The Urine in Health and Disease" was long popular among students and practitioners of medicine. This practical little volume has now been replaced by a more comprehensive and up-to-date handbook which has been prepared by Dr. Andrew F. Hewat. The new *multum in parvo* is certain to be popular, for it provides in well-ordered form, and in concise yet explicit language, full instruction regarding the clinical examination of urine, blood, sputum, pus, gastric contents, and faeces, and the correct interpretation of the

¹ "English Medical Women: Glimpses of their Work in Peace and War." By A. H. Bennett. With a Preface by Stephen Paget, F.R.C.S., and Frontispiece-Portrait of Mrs. Garrett-Anderson, M.D. Pp. ix + 159. London: Sir Isaac Pitman and Sons, Ltd., 1, Amen Corner, E.C. 1915. Price 3s. 6d.

² "A Nursing Manual for Nurses and Nursing Orderlies." By Duncan C. L. Fitzwilliams, M.D., Ch.M., F.R.C.S., Surgeon-in-Charge of Out-Patients and Lecturer in Clinical Surgery, St. Mary's Hospital, etc. Pp. 466, with illustrations. London: Henry Frowde, and Hodder and Stoughton, Oxford Press Warehouse, Falcon Square, E.C. 1914. Price 6s. net.

data obtained. We strongly advise all tuberculosis officers and others engaged in practical clinical work to procure a copy of this admirable little reference volume.¹

Messrs. J. Bibby and Son, Ltd., of Liverpool, have for some years undertaken the analyzing and testing of milk obtained from the dairies of their customers. The work carried on in their laboratories under the direction of Mr. John Hanley, F.I.C., F.C.S., has resulted in the collection of data likely to be of much general interest and service. A handsome volume has therefore been prepared presenting particulars of milk regulations, legal cases, analytical data, and Acts of Parliament relating to the milk problem. The work will be invaluable to medical officers of health, tuberculosis officers, and others for purposes of reference.²

The Canadian Association for the Prevention of Tuberculosis has just issued its Fourteenth Annual Report, containing transactions of its annual meeting and reports from branches in all parts of the Dominion.³

"The Sanitary Record and Municipal Engineering Year-Book and Empire Directory of Municipal Authorities and Officials," now in its thirty-third year of issue, is a reference work which medical officers of health, tuberculosis officers, and others engaged in services relating to public health and national efficiency cannot afford to be without. In addition to the pages reserved for diary records, there is a directory of municipal authorities and their officials in all parts of the Empire, data for engineers and surveyors, information regarding the latest developments of road construction, particulars of recent municipal and sanitary legislation, names and addresses of municipal engineering, public health, and scientific societies, examining bodies, Government departments. There is also a useful sanitary and municipal trades directory, and a section devoted to British health resorts. The volume has been thoroughly brought up to date, and is an indispensable reference work for all engaged in public health duties.⁴

Messrs. Schall and Son have just issued the sixteenth edition of their well-known manual on "Electro-Medical Instruments and their Management." It provides full particulars regarding all forms of X-ray appliances and electrical outfits required in clinical work.⁵

¹ "Examination of the Urine and Other Clinical Sick-Room Methods." By Andrew Fergus Hewat, M.B., Ch.B., M.R.C.P.E., Tutor in Clinical Medicine, University of Edinburgh. Pp. vii+212. Edinburgh: E. and S. Livingstone, 15-17, Teviot Place. 1914. Price 1s. 6d. net.

² "Bibby's Book on Milk. Section II.: The Law Relating to the Sale of Milk: its History, Criticism of its Administration, and Suggestions for its Amendment." Fourth edition. Pp. 256. Liverpool: J. Bibby and Sons, Ltd., Feeding Experts. 1914. Price 4s. net.

³ The Canadian Association for the Prevention of Tuberculosis: Fourteenth Annual Report. With Transactions of the Annual Meeting, held in Halifax, N.S., July 13 and 14, 1914. Secretary, George D. Porter, M.B., Bank Street Chambers, Ottawa. Pp. 307. Ottawa and Montreal: The Mortimer Press. 1915.

⁴ "The Sanitary Record and Municipal Engineering Year-Book and Empire Directory of Municipal Authorities and Officials for 1915." Pp. v+192 and Diary. London: The Sanitary Publishing Company, Ltd., 55-56, Chancery Lane, W.C. 1915. Price 5s. net.

⁵ "Electro-Medical Instruments and their Management, and Illustrated Price-List of Electro-Medical Apparatus." By Schall and Son, 71 and 75, New Cavendish Street, London, W. Sixteenth edition. Pp. viii+356, with illustrations. London: John Wright and Sons, Ltd. December, 1914. Price 2s. 6d.

PREPARATIONS AND APPLIANCES.

PROTECTION FROM FIRE.

FIRE is an enemy that must be considered in the case of all habitations and every form of building. In most public hospitals provision, more



MERRYWEATHER, LONDON

FIG. 4565

CORRIDOR HAND-PUMP FOR HOSPITALS AND SANATORIA.

or less adequate, has been made for dealing with an outbreak of fire, and appliances and helpers are usually available for dealing with any such accident in its beginnings. But with many sanatoria, open-air schools, and the like, there is reason to believe that too little attention is usually given to such matters as the prophylaxis and treatment of fire. At the present time, when many country houses are being used as hospitals and convalescent homes for wounded and sick combatants, it is most important that this question should receive attention. In this Journal we desire to insist on the importance of all sanatoria being supplied with suitable means for dealing with an outbreak of fire. In every sanatorium a regular fire-drill should be held. In only too many cases sanatoria are far removed from any central fire-station, and the services of an expert fire-brigade may not be attainable. Moreover, in many instances an adequate supply of water will not be available, and even where water is plentiful it may not be under sufficient pressure to be of much service. Messrs. Merryweather and Sons, Ltd., have introduced a form of very effective hand-pump, which is to be found in many Red Cross depots, and this would doubtless be of much value in many sanatoria.¹ The illustration on p. 97 shows the new corridor hand-pump in working order. The committee of every sanatorium should certainly seek expert advice in regard to their measures to cope with fire. We hope the Local Government Board, on whom devolve the responsibility of "approving" many sanatoria, are giving attention to this important matter.

A NEW STETHOSCOPE.

Through the courtesy of Dr. J. J. Singer, of the Washington University Hospital, St. Louis, and the A. S. Aloe Company, of St. Louis, Missouri, U.S.A., we have been able to test a new form of stethoscope.² It is very simple in construction, but is likely to be of much assistance in actual practice, and particularly in the examination of pulmonary cases. DR. SINGER'S STETHOSCOPE intensifies the audibility of sounds without changing their character. It consists of a set of resonators of different sizes, each of which can be readily connected to a hollow, curved Y-tube serving as a handle and also as a connection to the ear-pieces. The resonators are so constructed that they can be nested together and combined with a member which co-operates with a resonator of greater diameter to form a protecting cover for other resonators that are nested inside. Each resonator is cup-shaped, with a flat top wall, and is of metal. Each resonator is connected to the Y-tube handle in such a manner that it can be easily disconnected, thereby enabling the same connecting member to be used with different-sized resonators. When the rim of the cup-shaped resonator is placed in contact with the patient's chest, the air which is trapped inside of it is set in vibration by the vibration waves of the chest wall. These vibrations are then taken up in unison by the resonator itself. Consequently, the sound-waves are intensified and transmitted through

¹ For particulars regarding Fire Equipment for Sanatoria, see illustrated price-lists issued by Messrs. Merryweather and Sons, Ltd., Greenwich Road, London, S.E.

² Full particulars regarding Dr. Singer's Stethoscope can be obtained on application to the makers, the A. S. Aloe Company, Aloe Building, 513, Olive Street, St. Louis, Missouri, U.S.A.

the hollow connecting device, and thence to the ear-drums of the examiner through the ear-pieces. The cap member consists of a disc which is provided with several spring fingers that lap over the flange or rim of the large resonator, thus holding the cap member in position. This is provided with a stud, or guide, in the centre, which projects through the centre openings of the resonators, and thus holds them in position in the enclosing shell, so preventing them from rattling and moving. When the instrument is to be used, the cap member is removed, and a resonator of the proper size is then secured to the connecting member, the operator grasping the shank of the member and using it as a handle to place the resonator in proper position on the body of the patient. The small resonator is especially adapted for auscultating children, localizing heart murmurs, and in the auscultatory method of taking blood-pressure. The instrument can be easily sterilized. Friction sounds are largely eliminated, because only the lower edge of the side-wall of the resonator comes in contact with the patient's body. Furthermore, this form of stethoscope overcomes the necessity of a physician owning a number of stethoscopes of different sizes, as it comprises in itself a set of resonators of different sizes that can be stored compactly. As far as we have tested Dr. Singer's stethoscope, we are very pleased with the results.

EQUIPMENT FOR SANATORIA AND PATIENTS.

The well-known firm of R. A. Lister and Co., Ltd., of Dursley, Gloucestershire, have made a speciality of WOOD FURNITURE and other equipment for open-air sanatoria, terraces, gardens, and the like.¹ Oftentimes verandas, tiled surfaces, paths, or even lawns, closely sur-



GARDEN TUBS FOR OUTDOOR USE.

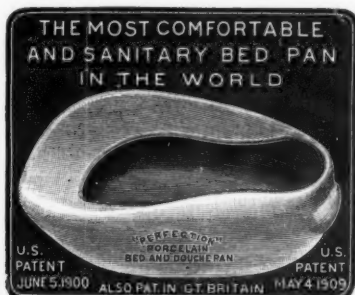
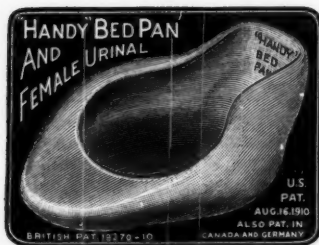
round the hospital, sanatorium, or residence, allowing no room or space for the planting out of flowers, shrubs, or trees. In such cases use should be made of the excellent GARDEN TUBS illustrated in the accompanying figure. They are made of durable wood, are of artistic form, and can be had of almost any size.

Messrs. Grimwades, Ltd., have favoured us with specimens of their SANITARY APPLIANCES, which in form and general convenience mark a great advance on those in use in many hospitals and sanatoria.² The

¹ An illustrated catalogue of "Lister's Tubs" and other Equipment for Sanatoria, Gardens, and Outdoor Life, will be forwarded on application to Messrs. R. A. Lister and Co., Ltd., Dursley, Gloucestershire.

² For full particulars and illustrations application should be made to Messrs. Grimwades, Ltd., Stoke-on-Trent (London offices, 13, St. Andrew's Street, Holborn, W.C.), who are the manufacturers for this country under the patents held by Messrs. Metwater and Co., of New York.

"Perfection" hospital ware have been scientifically designed and skilfully constructed. The "Perfection" Bed and Douche Pan is



British Patents No. 9583—1900 & No. 5311—1909

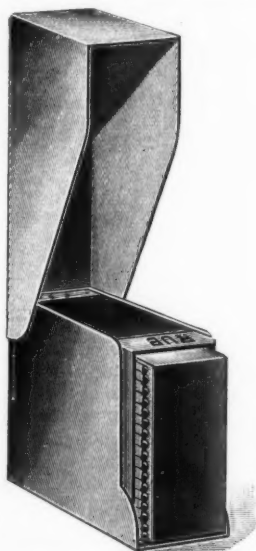
anatomically correct, fitting the body without exerting injurious pressure. There are no insanitary corners or spout in which material can collect. The "Handy" Bed-Pan and Female Urinal is another excellent model. The urinals are constructed so as to obviate the danger of spilling the contents, and the male form can be conveniently used in conjunction with the bed-pan. These appliances can be obtained in sizes to meet the needs of adults of both sexes and children.



The chief features of these indispensable hygienic appliances are shown in the accompanying figures.

Messrs. James Spicer and Sons have introduced a form of "Economic" Antiseptic WATERPROOF PAPER which is likely to be of service in hospitals and sanatoria.¹ It can be obtained in rolls 35 inches wide and 250 yards long. For the making of bed-sheets and provision for the protection of bandages, fomentations, and the like, this new and inexpensive agent promises to be of considerable service.

Patients in sanatoria and all others who spend much time out of doors, and who are permitted the luxury of an occasional smoke, will welcome the ingenious but simple "Service" MATCHBOX COVER²



¹ Specimens of the new "Economic" Antiseptic Waterproof Paper may be obtained on application to the makers, Messrs. James Spicer and Sons, Ltd., 50, Upper Thames Street (Abbey Wharf), London, E.C.

² The "Service" Matchbox Cover is made of nickel, and can be obtained from Messrs. Bryant and May, Fairfield Works, Bow, London, E. Price 1s. post free.

introduced by Messrs. Bryant and May. It has been designed and made primarily for our men on active service, but it should be known and used by all who appreciate the advantages of a pocket matchbox with means for lighting a match in windy weather and keeping matches dry and in business order.

THE INHALATION TREATMENT OF PULMONARY TUBERCULOSIS.

The treatment of bronchial and pulmonary affections by inhalation is of ancient origin. During recent years, and in great part due to the advocacy of the late Dr. Burney Yeo, Dr. D. Bridges Lees, and Dr. C. Muthu, of the Mendip Hill Sanatorium, cases of pulmonary tuberculosis have been treated with various forms of medicated inhalation. Dr. Muthu advocates the continuous use of a formaldehyde inhaler, and has published results which, to say the least, are highly encouraging. Messrs. Oppenheimer, Son and Co., Ltd., have prepared a series of inhalants under the detailed direction of Dr. Muthu, and these can best be employed in the form of the oro-nasal inhaler illustrated in the accompanying figures.¹

The Pyninhale Company have favoured us with a specimen of their new PYNINHALER.² This is an ingenious little apparatus for the inhalation of various medicaments. It is likely to be of service in dealing with laryngeal, bronchial, and some forms of pulmonary disorder. The inhalant supplied for use with this neat and novel glass inhaler is pleasant and efficacious.



DR. MUTHU'S ORO-NASAL INHALER.

NEW PHARMACEUTICAL AND THERAPEUTICAL PREPARATIONS.

The value of antiseptics and disinfectants is being very forcibly brought home to us as a nation. Many excellent preparations are now available and specially suitable for use among tuberculous and other infectious cases. "LYSOL" has for long been a favourite in sanatoria, and is certainly an excellent preparation for use in the collection and proper treatment of tuberculous sputa. Messrs. Charles Zimmerman and Co. state that their Lysol is now being manufactured entirely in England, under the supervision of Mr. Ernest J. Parry, F.C.S., and Mr. Arthur Ling, F.I.C.³

¹ Full particulars regarding Dr. Muthu's series of Inhalants and his Oro-Nasal Inhaler can be obtained from Messrs. Oppenheimer, Son and Co., Ltd., 179, Queen Victoria Street, London, E.C.

² The Pyninhale Outfit is supplied by the Pyninhale Company, 10, Farringdon Avenue, London, E.C.

³ Samples of "Lysol" will be sent on application to Messrs. Charles Zimmerman and Co. (Chemicals), Ltd., 9-10, St. Mary-at-Hill, London, E.C.

"Toxol" is a new and thoroughly efficient antiseptic and disinfectant suitable for use in sanatoria, and particularly serviceable in dealing with tuberculous and other infective sputa. It consists of cresols dissolved in neutral liquid soap. It is said to possess many advantages over carbolic acid, and is certainly much safer to use with consumptive patients. Toxol has the high carbolic acid co-efficient of 3·3. For use in sputum flasks it is used as a 5 per cent. solution. Toxol is non-caustic, and does not injure the hands, fabrics, or utensils. In addition to its deodorant and disinfectant properties, it is a cleansing agent of high value. We strongly recommend the use of this excellent preparation in the hygienic management of consumptives and other tuberculous cases.¹

"KRESAPOL" is another new germicide. It is a saponaceous preparation freely miscible with water. It is a reliable agent for the sterilization of surgical instruments and for general disinfection of the hands and other cutaneous surfaces, and for application to wounds. It is also useful for the cleansing of infected linen and the safe disposal of tuberculous discharges.²

THERMOGENE is now so well known as to need scarcely a reference, but it is a preparation which is often of much service in dealing with pleuritic pains and other forms of thoracic discomfort so commonly met with in patients in sanatoria and in tuberculous subjects undergoing domiciliary treatment. Thermogene provides a compact, clean, and often very effective means for relieving pain and reducing inflammatory conditions.³

Iodine and other antiseptics suitable for immediate application



(Patent applied for)

"AZOULE" IODINE WITH ATTACHED CYANIZED SWAB.

to wounds or morbid tissues can now be obtained in convenient "AZOULE" form, as indicated in the accompanying illustration.⁴

Cod Liver Oil has for long occupied a popular place among agents considered serviceable in the treatment of tuberculosis. From time to time other oils have been suggested as likely to be useful in dealing with states of malnutrition or in improving the condition of subjects suffering from phthisis or other wasting diseases. Recently Messrs. W. Martindale have introduced a series of PAVIMOL PREPARATIONS which seem destined to be of considerable assistance in dealing with

¹ "Toxol" is manufactured by Boots Pure Drug Company, Ltd., Station Street, Nottingham, from whom full particulars and specimens can be obtained on application.

² "Kresapol" is prepared by Messrs. Ferris and Co., Ltd., wholesale druggists, Bristol.

³ Specimens of Thermogene, with full particulars regarding its application, will be sent on application to the makers, the Thermogene Company, Ltd., 95, Hayward's Heath, Sussex.

⁴ For full particulars and prices application should be made to the makers, Messrs. Allen and Hanburys, Ltd., 7, Vere Street, Cavendish Square, London, W.

this class of case. Pavimol is an emulsion containing 50 per cent. of pure Poppy Seed Oil ("Emulsio Olei Papaveris"). The oil is present in exceedingly minute particles, and seems to be readily assimilated. It is palatable, and does not give rise to unpleasant after-effects. Children take it readily, and it appears likely to be of special value in the management of tuberculous and tuberculously disposed young subjects. Pavimol is also available in a particularly attractive form in combination with malt. For patients who object to oily preparations a powder preparation of Pavimol has been secured, flavoured with saccharin. Certainly Pavimol and its combinations merit thorough testing.¹

In the treatment of many severe cases of tuberculosis and other serious diseases the MEAT PRODUCTS manufactured by Messrs. Brand and Co., Ltd., will oftentimes be found of the greatest value.² We would particularly direct attention to the valuable "Brand's Meat Juice," a preparation consisting of raw-meat juice obtained from the finest beef under pressure, and containing all the stimulating and nourishing elements of the meat in a concentrated and easily-assimilated form. "Ferrocarnis" is another preparation of considerable value in the management of cases in which anæmic conditions and atonic states exist. It is a solution of iron in organic combination with concentrated raw-meat juice, and it is readily tolerated even when ordinary forms of iron cannot be borne.

¹ Full particulars regarding the Pavimol Preparations can be obtained from Messrs. W. Martindale, 10, New Cavendish Street, London, W.

² Specimens of the Brand Products will be sent to medical practitioners on application to Messrs. Brand and Co., Ltd., Mayfair Works, Vauxhall, London, S.W.

NOTES.

THE PREVENTION AND ARREST OF TUBERCULOSIS.

TUBERCULOSIS is a preventable disease, and during recent years great progress has been made in the organization and administration of measures aiming at its prevention and arrest. Dr. Arthur News-holme, in his recently-issued Report as Chief Medical Officer of the Local Government Board, furnishes data regarding administrative control, and statistics relating to the prevalence of tuberculosis, which provide an authoritative and comprehensive survey of the present position of anti-tuberculosis work.¹

Comparing the experience of 1913 with the average experience of 1891-1900, the rate of decline in the mortality from all forms of tuberculosis is 33 per cent., and that from pulmonary tuberculosis 28 per cent. The death-rate from all causes has fallen in the same time 25 per cent. During the year under consideration (1913-14), the Local Government Board have practically completed its gradually extending programme by making all forms of tuberculosis compulsorily notifiable. The provisions of the National Insurance Act, 1911, as to sanatorium benefit; the capital grant under the Finance Act, 1911, of one and a half millions sterling for the provision of institutions for the treatment of tuberculosis in the United Kingdom; and the offer of the Treasury to defray one-half of the annual cost of schemes for the treatment of tuberculous cases, proposed by local authorities and approved by the Local Government Board, after deducting any contribution received from the Local Insurance Committee or from other sources—all these have greatly furthered the establishment of effective means for dealing with all forms of tuberculous disease. The Report is of particular interest in that it deals with Public Health action following notification. We are glad to see it stated that "With the further development of tuberculosis schemes, and as inspection and oversight increase, the Public Health work which should follow on notification of cases of tuberculosis will doubtless become more uniformly good. . . . A number of points have been noted for consideration in connection with possible modifications of the tuberculosis regulations, in the light of our increasing experience of their working. . . . Occasional difficulty has been experienced owing to the fact that the visit following notification may be the first indication to the patient or his friends that the illness is tuberculosis. This thoughtlessness implies unnecessary cruelty to the patient, and is contrary to the interest of the notifying practitioner as well as the

¹ Forty-third Annual Report of the Local Government Board, 1913-14. Supplement containing the Report of the Medical Officer for 1913-14. Pp. cxxiv+237, with maps and charts. [Cd. 7612]. London: Wyman and Sons, Ltd., 29, Bream's Buildings, Fetter Lane, E.C., 1914. Price 1s. 11d.

patient." Statistics are presented which indicate the wide differences which prevail in regard to the examination of specimens of sputum on behalf of Public Health authorities. For every 100 deaths from pulmonary tuberculosis, the examinations of sputa in Blackpool are 602, while in Leicester they are only 45. The importance in relation not only to diagnosis, but also to prognosis of the presence of tubercle bacilli in the sputum, is illustrated by returns provided by the Medical Officer of Health for Brighton. Dr. Forbes shows that during 1913 the after-history was obtained of sanatorium patients four years after leaving the institution. The cases comprised 384 in whose sputum tubercle bacilli were found, and 148 in whose sputum it was not found. Of the former, 14 per cent., and of the latter 55 per cent., were alive at the end of four years.

With regard to tuberculosis schemes, it is stated that "in no case has a scheme been approved without an organization for getting into contact with patients, classifying them for appropriate forms of treatment at home or in an institution as required, and supervising them, and when necessary securing the continuance of their treatment after discharge from the residential institution." In regard to the appointment of tuberculosis officers, it is interesting to note the official opinion: "In the appointment of clinical tuberculosis officers, the minimum requirements as to age and experience recommended by the Departmental Committee on Tuberculosis, or the equivalent of these requirements, have been made a condition of approval of the appointment by the Board. In one instance the approval of the Board to the appointment of a medical woman as clinical tuberculosis officer was sought. Approval was given, subject to the condition that the services of the Medical Officer of Health would be available if required for special cases. During the year several applications have been made for approval of the appointment of general practitioners as part-time tuberculosis officers or assistant tuberculosis officers. In very few of these instances has the practitioner in question had the special experience required by the Board and the Insurance Commissioners. Even when this condition is fulfilled, the appointment is open to objection from the standpoint of other practitioners in the area. Friction may arise from the practitioner selected treating the patients of other practitioners. This difficulty does not arise when a part-time tuberculosis officer is also engaged in consulting practice. At the same time, it is very desirable that, in addition to the arrangement for frequent consultation between the tuberculosis officer and the practitioner under the Domiciliary Order for the treatment of tuberculosis, every facility should be afforded to practitioners to attend the practice of dispensaries; and for this purpose their appointment as clinical assistants for limited periods, but not in responsible charge of patients, should be encouraged."

With regard to the establishment of tuberculosis dispensaries, it may be well to state the usual conditions imposed by the Local Government Board in approving a dispensary under the National Insurance Act for the treatment of tuberculous cases: "(a) That the dispensary will be open to inspection at any time by any of the Board's officers or inspectors; (b) that such records will be kept in connection with the dispensary as the Board, after consultation with the Insurance Commissioners, may from time to time require; (c) that the Board

will be informed of any proposed alteration in, or addition to, the medical staff of the dispensary; (d) that no part of the premises in which the dispensary is situated will be used for the purpose of a clinic for school children without the Board's consent, and that the Board will be informed if it is proposed at any time to use any of the dispensary rooms, or any other rooms in the same premises, for purposes other than in connection with the tuberculosis dispensary; and (e) that, in the event of the dispensary being discontinued at the premises in question, the Board will be at once informed." In regard to London dispensary schemes, it is shown that "the outstanding feature in the development of Metropolitan dispensary schemes during the year has been the willingness of the great general and special hospitals to take part in the work." The importance of early diagnosis, "following up," and the examination of "contacts," is emphasized. With regard to the latter, it is pointed out that—(1) It frequently happens that the first notified case is not the first clinical case of tuberculosis in a given family; and from the standpoint of prevention the detection of such earlier cases is important. (2) Examination of contacts frequently discovers patients in an earlier and more curable stage of disease than the notified patient. Until a much higher proportion of total cases of tuberculosis than at present are recognized in this early stage, the number of patients who can be returned as "cured" is not likely to be satisfactory. A section of special value is devoted to "care and after-care." "A large proportion of the patients treated in sanatoria, although greatly improved in health, perhaps even to the extent of complete disappearance of symptoms of disease, are liable to relapse if placed under unfavourable conditions, either domestic or industrial, after their return home. For such patients the question of supervision and of after-care is most important. Many other patients need continued care, and, owing to increasing poverty, their families, as well as possibly the patients themselves, need assistance calculated to prevent the spread of infection. This may take the form of food, etc., with a view to increasing the resistance of the family to infection, or of means for diminishing infection, or by helping to secure improved housing, and especially more bedroom accommodation. Such care is needed while patients are under domiciliary or dispensary treatment, and after their discharge from a sanatorium. It should be equally available for both insured and non-insured patients. In this respect treatment and care should be guided by the same principles, and for this reason it will be highly desirable for the councils of counties and county boroughs to organize this work." Valuable suggestions are made which social service workers will do well to consider. It is shown that care committees will be able to assist patients to obtain work suitable for their special conditions, to encourage patients to take precautions and to carry out treatment which has been advised, making the giving of assistance conditional on this, and to facilitate such arrangements as may be needed for the welfare of other members of the family. It is suggested that among the uses to which a voluntary fund may be put are the following: (a) The provision of additional food for the family during the absence of the breadwinner in a sanatorium and during the subsequent period of dispensary treatment; (b) instruction in the choice of food and simple lessons in its preparation; (c) assistance with the rent, so that the patient may sleep in a separate bed-

room; (d) provision of additional bed and bedding and of clothing. It is further suggested that care committees should be organized on lines which will fulfil the following desiderata: (1) The County or County Borough Council, as the local authority under the tuberculosis scheme, should undertake to organize the care committee, and the officers of the dispensary should be allowed to assist the committee in their work. (2) The work of the care committee should relate to insured and non-insured tuberculous patients alike. (3) As the main funds of the committee will be derived from voluntary sources, and in order to avoid overlapping of assistance, the committee should have represented on it the chief charitable organizations of the county or county boroughs. In administering voluntary funds, the aid should be independent of consideration of worthiness of the recipients, except in so far as this may affect the possibility of the assistance fulfilling its object. (4) In addition, the committee should include the county or county borough Medical Officer of Health and tuberculosis officer as *ex officio* members, and the local Medical Officer of Health and tuberculosis officer similarly on district committees. The committee should include members of the local Insurance Committee, of the Board of Guardians, and of the county Education Committee, and any local committees likely to find work for patients. Representatives of the Labour Exchange should be included. It would appear that on July 18, 1914, there were 104 approved sanatoria and special consumption hospitals, containing 5,398 beds, of which 20 institutions containing 1,339 beds, or 25 per cent. of the total accommodation, had been provided by local authorities. In residential institutions for administrative counties, the average duration of residential treatment per patient during 1913 was 74.6 days, and for county boroughs 77.8 days. Finally, a brief reference to statistics may be made: During 1912, the most recent year for which complete figures are available, 38,083 persons died in England and Wales from pulmonary tuberculosis, as compared with 39,232 in the year 1911; and 11,968 from non-pulmonary forms of tuberculosis, as compared with 13,888 in 1911. In 1911 the standardized death-rate from pulmonary tuberculosis in England and Wales for both sexes was 1.06 per 1,000, and in 1912 it was 1.01. The death-rate in 1911 was 25 per cent. lower, and in 1912 26 per cent. lower, for females than for males. The death-rate from pulmonary tuberculosis varies greatly according to age as well as sex. In 1912 it was at its maximum in males at the age-period 45 to 50, amounting to 2.30 per 1,000 living at this age, and almost the same in the next ten years of life. Among females in the same year the highest death-rate was 1.35 at the age-period 35 to 40, the death-rate from 25 to 35 and from 40 to 50 being not much lower. Pulmonary tuberculosis was notifiable throughout England and Wales during the whole of 1913, and non-pulmonary forms of tuberculosis from February 1, 1913. During the last eleven months of 1913, 43,168 cases of pulmonary tuberculosis among males and 37,620 among females were notified for the first time by medical practitioners. The corresponding figures for non-pulmonary tuberculosis were 18,952 notifications of male and 17,399 notifications of female cases. Of this number, 5,445 were notified by school medical inspectors—viz., 1,441 cases of pulmonary and 1,355 of non-pulmonary tuberculosis in boys, and 1,503 cases of pulmonary and 1,146 of non-pulmonary tuberculosis in girls. It would appear that as regards pulmonary

tuberculosis there are from 25 to 20 notifications for every 10 male deaths, and from 34 to 21 notifications for every 10 female deaths. For other tuberculosis the proportion varies from 44 to 28 per 10 deaths. Dr. Newsholme's section on tuberculosis is of the greatest value, and deserves thorough study in its entirety. We could wish that it might be possible to arrange for its publication in separate brochure form, and its distribution to all medical and lay workers in the national anti-tuberculosis campaign.

TUBERCULOSIS AND CONDENSED AND DRIED MILK.

Professor Sheridan Delépine, of Manchester, has recently published the results of a very valuable research which relates to the presence of tuberculous infective material in condensed and dried milk.¹ It appears that in the preservation of milk, as practised at four factories under investigation, and all situated in England, the following three methods are employed: (a) Manufacture of sweetened condensed milk. (b) Drying of milk over heated revolving cylinders. (c) Drying by spraying the milk into a current of hot air. The main purpose of the first set of experiments was to ascertain whether tuberculous cow's milk was still capable of conveying tuberculosis after being treated according to methods (a) and (b). In the second set of experiments special attention was paid to the general effects upon the bacterial contents of milk which followed the use of methods (b) and (c). The research was carried out with great care and no little ingenuity, and Dr. Delépine's conclusions are best given in his own words: (1) "The total number of bacteria present in mixed cow's milk, such as is usually supplied to town consumers, has been found to be considerably reduced by treatment according to each of the three methods investigated. The reduction was greatest in the case of method (a) (manufacture of sweetened condensed milk), and least in the case of method (c) (drying of milk sprayed in a current of hot air). Method (b) (drying of milk over heated revolving cylinders) occupied an intermediate place. (2) In each of the three methods of treatment there was a stage at which the reduction in the total number of bacteria was much greater than that observed in the finished article ready for sale. (3) The increase in the number of bacteria observed during the final stages is due to *recontamination*. By recontamination I mean the results of the exposure of a product, partly or completely sterilized, to sources of infection by which some of the bacteria removed by sterilization are reintroduced. (4) The reduction in the total number of bacteria was almost entirely due to the death of streptococci, staphylococci, sarcinae, bacilli of the *Bacillus coli* type, streptothrices, yeasts, etc. (5) At none of the stages of preparation was the milk ever found completely sterile. The amount of heat to which the milk was submitted was insufficient to bring about the death of

¹ "Report to the Local Government Board upon the Effects of Certain Condensing and Drying Processes, used in the Preservation of Milk, upon its Bacterial Contents," being Food Report No. 21 of the "Reports to the Local Government Board on Public Health and Medical Subjects" (New Series, No. 97). London: Wyman and Sons, Ltd., 29, Bream's Buildings, Fetter Lane, E.C. 1914. Price 6d.

several saprophytic and of some pathogenic bacteria. (6) Among the saprophytic bacteria, which were invariably found to resist pasteurization, those most commonly detected were sporing bacilli of the types included under the term *B. mesentericus*. Some streptothrices appeared in some cases to have survived, but the evidence on that point was not conclusive. (7) Of the pathogenic bacteria, the tubercle bacillus was the only one the fate of which was investigated. Some living tubercle bacilli of bovine origin were found to have survived treatment according to method (b). It may be safely assumed that method (c), which yields a product giving a higher total bacterial count than method (b), has even less effect upon tubercle bacilli. The same bacilli resisted the process of pasteurization which forms part of method (a). (8) The tubercle bacilli which had survived pasteurization in method (a) and drying by heat in method (b) were still capable of producing progressive tuberculosis in guinea-pigs inoculated subcutaneously with milk containing these bacilli, but the course of the disease produced by these bacilli was very much slower than that of the disease produced in guinea-pigs inoculated with the same amount of untreated tuberculous milk. The tuberculosis produced by the heated bacilli was *latent* or *occult* for some four weeks. Young rabbits fed with milk containing these modified bacilli did not contract tuberculosis."

RECORDS OF PROGRESS.

The Local Government Board have issued a new and revised List of Sanatoria and other approved Residential Institutions for tuberculous cases, dated February 20, 1915.¹

The City of Lincoln Education Committee have issued a well-illustrated Special Report of their new South Park Open-Air School.² A well-illustrated account of this excellent centre for open-air education and management appeared in the *Teacher's World* for March 24, 1915.³

In the recently published volume on "Defective Children" there appears an important article on Tuberculous Crippled Children by Mr. H. J. Gauvain, the Medical Director of the Lord Mayor Treloar Hospital and College at Alton.⁴

The First Report has just been issued of the Worcestershire Open-Air School at West Malvern.⁵ This contains plans and illustrations and much helpful information. All interested in the open-air education

¹ "List of Sanatoria and Other Residential Institutions approved by the Local Government Board under the National Insurance Act, 1911, for the treatment of Persons suffering from Tuberculosis and Resident in England (excluding Monmouthshire), with the Names of the Administrative Counties and County Boroughs in which the Institutions are situate, and the Date on which the Approval expires in Each case." Pp. 8. London: Wyman and Sons, Ltd., 29, Bream's Buildings, Fetter Lane, E.C. 1915. Price 1d.

² "City of Lincoln Education Committee: South Park Open-Air School. Special Report for the Year ending October, 1914." Pp. 61, with plan and illustrations. Lincoln: Keyworth and Sons, Swanpool Court. 1914.

³ The *Teacher's World* is published weekly by Messrs. Robert C. Evans and Co., Sardinia House, Kingsway, London, W.C. Price 1d. per number.

⁴ "Defective Children." Edited by T. N. Kelynack, M.D. London: John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, W. 1915. Price 7s. 6d. net.

⁵ "Worcestershire Open-Air School, West Malvern: First Annual Report for the School Year 1914." Malvern: News Printing Works, Church Street.

would do well to procure a copy of this excellent report of hygienic work well planned and ably carried out. The school owes its initiation in great measure to the enterprise and efforts of Miss Severn Burrow, St. James's, Great Malvern, from whom full particulars may be obtained.

An important volume written by Dr. D. Barty King, with a foreword by Sir William Osler, has just been published.¹ It is entitled "Scheme for Dealing with Tuberculous Persons in the City of London," and will be of much interest and value to all engaged in the organization and administration of tuberculosis work in the Metropolis and other cities and large centres. We hope to give a review of the work in our next issue.

The first volume of "The Year-Book of Open-Air Schools and Children's Sanatoria" was issued in the autumn of 1914 as a companion volume to "The Tuberculosis Year-Book and Sanatoria Annual," the first volume of which was published in the autumn of 1913. The issue of the second volume of the latter work has been unavoidably delayed by the outbreak of war, as it has been impossible to obtain information regarding many schemes and new sanatoria which were in contemplation or in process of accomplishment. It is hoped that tuberculosis officers will favour the Editor with all necessary particulars as soon as possible, as it is hoped that the second volume of "The Tuberculosis Year-Book" may be ready for publication at an early date.²

¹ "Scheme for Dealing with Tuberculous Persons in the County of London: its Application to Other Cities, with Some Observations on the National Organization of the Campaign Against Tuberculosis." By D. Barty King, M.A., M.D., M.R.C.P., with a Foreword by Professor Sir William Osler, Bart., M.D., F.R.C.P., F.R.S. Pp. xi + 54, with fifteen charts. London: John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, W. 1915. Price 5s. net.

² "The Tuberculosis Year-Book and Sanatoria Annual" and "The Year-Book of Open-Air Schools and Children's Sanatoria" are published by Messrs. John Bale, Sons and Danielsson, Ltd., 83-91, Great Titchfield Street, London, W. Price 7s. 6d. net each vol.